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AMERICAN ROCK GARDEN SOCIETY BULLETIN

Albert M. Sutton, Editor

VOL. 30 OCTOBER, 1972 No. 4

ROCK GARDEN FERNS: *ASPLENIUM TRICHOMANES*

JAMES R. BAGGETT, *Corvallis, Oregon*

The genus *Asplenium* is one of nature's richest gifts to rock gardeners, containing at least a dozen desirable species. Not all of these are easy subjects in the garden; in fact, one or two might be considered nearly impossible and others fairly difficult in many environments. Borderline winter hardiness limits the garden possibilities of some, and others are poorly adapted to heat and other factors associated with lowland areas. However, *Asplenium trichomanes,* the Maidenhair Spleenwort, combines beauty, grace, and small size with an easy temperament in the rock garden.

Before discussing this one species further, it may be of interest to summarize some of the general characteristics of the genus, particularly as they apply to non-tropical species. The hardy Aspleniums are small, varying generally from about 2 inches to 1 foot in height, with most of the better ones reaching only 4 to 8 inches under garden conditions. All are evergreen, or nearly so, and are closely tufted with rhizomes described as ascending or shortly creeping, spreading gradually by multiplication of the crown or rhizome clump. The leaves vary in form from simple or pinnatified to tripinnate with finely lobed or incised segments, but there are examples of dichotomous branching. Most are once-pinnate with the leaflets incised, lobed, or toothed by some degree. The new leaves are extended by uncoiling, that is, they have circinate vernation. The sori are oblong, usually straight, short, and are at an angle to the midrib. There is an indusium which opens on the edge nearest the midrib.

In the usual broad classification, *Asplenium* is placed in the family Polypodiaceae, along with all typical ferns, but excluding such genera as *Azolla, Marsillea,* and *Botrychium.* At the other extreme, a modern treatment (4) places this genus in a narrow family Aspleniaceae, along with two others which are of interest to rock gardeners, *Phyllitis* and *Ceterach,* and a fourth genus, *Pleurosorus.* The closely related *Camptosorus* (the Walking Fern) would no doubt be in this family also, since it is included in *Asplenium* by some botanists. Among the Aspleniums the hardy ones are very much in the minority; there are probably at least 100 tropical or subtropical species with a tremendous variety of size and form to be enjoyed in greenhouses. In older books, some large ferns such as the Lady Fern, were included in this genus, but have been rightfully removed.

Asplenium trichomanes—A typical plant.

James R. Baggett

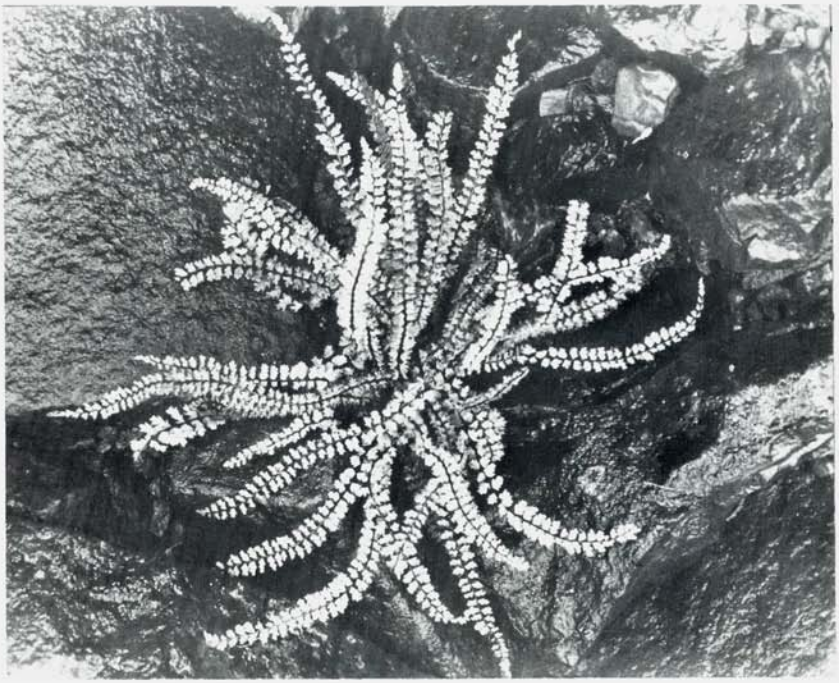
The Maidenhair Spleenwort has a remarkable distribution, which should give some indication of its adaptability. Though frequently described as being widely distributed in the temperate areas of the Northern Hemisphere, it is found also in the Southern Hemisphere and on the high mountains in the tropics. For example, it grows in Australia, New Zealand, and on mountains of 5000 ft. or higher in the Hawaiian Islands. Though I could not obtain specific botanical references, Britten (1) listed its occurrence in Peru, in Guatemala at 10,000 ft., and in South America. In North America it is found from Nova Scotia and Alaska in the north, to as far south as Georgia, Arizona, and Mexico. It is very uniform in appearance throughout the world, though races differing in chromosome number have been recognized. In some areas it is described as being very abundant, such as on old walls in England. At the other extreme, it is quite rare in the Western States, perhaps because the summers in much of the area are typically very dry. It is always found on rocks, and usually in moist, mossy situations. Although it is often said to favor limestone, it is also found on sandstone, and in Oregon occurs in the Cascade Mountains on basalt.

This fern is medium in size, small enough to fit in the rock work among small rock garden plants, but large enough to be decorative. In shady, moist and rich conditions it could reach 12 inches, but 5 to 8 inches is a typical size range, and in exposed, dry sites it could be as small as 3 to 4 inches. The once-pinnate leaves are narrow, curving and graceful. The largest leaflets on a 6-inch leaf are only ¼ inch long, and usually with the undersides bulging with sori all the way to the top of the leaf. The rachis is smooth, shiny, dark brown and persistent for several years after the leaflets drop.

Because this fern is nicely evergreen and has a dense tuft of leaves, it may be just as well to leave it in its natural, unpruned state most of the time, with old leaves and bare, wiry leafstalks accumulating. Most ferns would be too messy to tolerate in a well-kept garden if grooming was ignored.

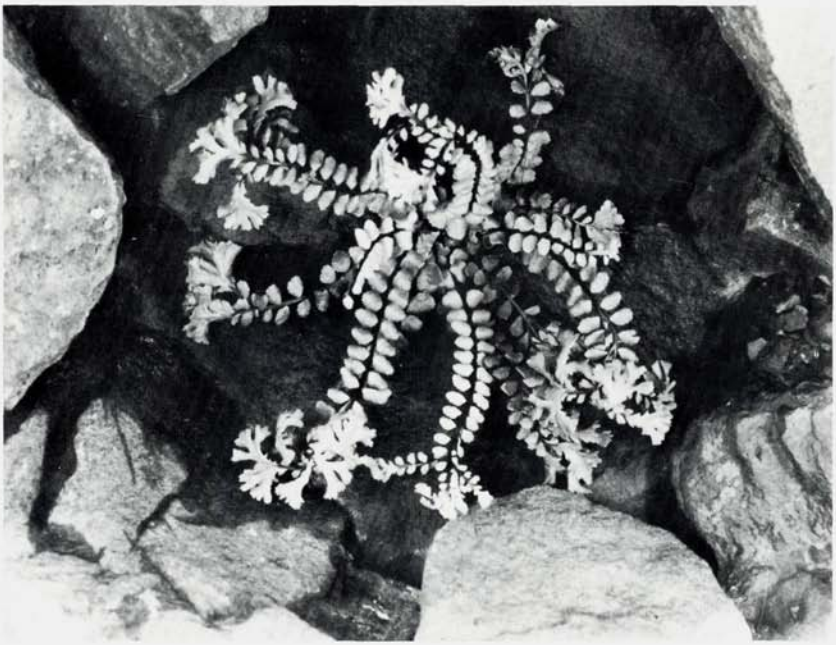
The pictures show the typical form and the two varieties I grow, one with incised leaflets, known as variety *incisum,* and the other with a somewhat open terminal crest, known as variety *cristata.* Both are of unknown original source, and both are fertile forms. The varieties do not seem to differ from the normal species in cultural characteristics, but both may tend to be smaller, and the incised variety is less upright. Though the differences in leaflet form, as shown in the pictures, seem to be minor, the plants differ considerably in general appearance. Since this variety *incisum* is fully fertile, it is obviously not one of the sterile plumose forms described by Kaye (2) and Britten (1). It resembles a variety *A. trichomanes incisum* Moule pictured in Kay's book. However, that form is said to show its leaflet character in the second year, while the variety I have can be recognized earlier. A variety *incisum* was found in 1899 in Tennessee, according to Shaver (3), whose figure shows more irregular division of the leaflet. Kaye also describes a variety *cristata* which also may differ from the plant I have been growing. Because the mutations which produce aberrant forms occur independently and in plants with different genetic backgrounds, it is not surprising that such differences occur.

CULTURE: The universal occurrence of this fern in moist, rocky habitats make some of its basic cultural requirements apparent. However,



Asplenium trichomanes var. *incisum.*

James R. Baggett



Asplenium trichomanes var. *cristata.*

James R. Baggett

though good drainage and adequate soil moisture are required, a vertical, shady cliff is not a necessity. Planted in a peaty, gritty mix containing some nourishment and with provisions for irrigation as needed, it will grow in various sites in the rock garden. I have them in east-facing rocks with full sun until noon, north-facing rocks with some full sun in the afternoon, in full shade in a planter near a building, and between low stones used to separate paths from raised beds. The amount of sun tolerated would obviously depend on the severity of the summer climate. The question of limestone preference is ignored; most of my ferns being grown in pockets among basaltic rocks, nor is lime added to the soil mix. Gypsum is supplied in generous quantity to all my soil mixes, but I have never had any proof that there is a benefit. Some authors recommend a mixture of humus and limestone chips as a growing medium. If young plants are yellow, poor in growth, and having difficulty in getting established, feed them lightly and cautiously with ordinary fertilizer materials dissolved in water, or with whatever type of nutrients you prefer to use, until growth is satisfactory.

Propagation may be by division of large specimens, but like collected plants, the new sections can be difficult to establish. Strong young plants grown from the spores are the best planting stock, and by using this method the dwindling natural populations can be spared. *Asplenium trichomanes* and its fertile varieties are among the easiest of ferns to raise from spores. The spores are produced in abundance and are available on the leaves all fall and winter. Like their mothers, the young ferns are non-temperamental, as ferns go, and should grow up to be adaptable and pleasing rock garden plants.

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*Space limitations prohibit listing all references consulted on distribution and botanical characteristics.

THE PINE BARRENS

JOHN P. OSBORNE, *Westport, Conn.*

The Pine Barrens are flat lands close by the sea. They cover about a thousand square miles, roughly one eighth of the state of New Jersey, from a point just south of the town of Lakewood to a little north of Cape May and inland to about the middle of the state. A large part, possibly as much as one third, is bog country, white cedar swamps through which many small streams slowly flow. The rest is white sandy soil not too unlike that found on mountains above timber line.

Accounts of visits by early naturalists contain excerpts such as . . . "Two or three miles more of a similar wilderness, and the forest growth thinned out and dwindled down to dwarf proportions as we emerged upon the rolling heath-like lower plains." . . . "Nothing could be more restful to the eye than the rolling expanse of green plain, melting away in every direction into the misty distance, the white sands gleaming out here and there like whitecaps on an emerald sea." . . . "The heat rising from the parched ground gives a blur of uncertainty to distant outlines, and we close our eyes before the glare of the sun on the exposed gravel areas. The only sound of life is the weary, vibrant trill of the prairie warbler, which rises on the hot air like a supplication for life." . . . "The cool shade of the cedar swamp where the road runs through the dark tea-like water of the stream; the refreshing draught of the water itself, always palatable in spite of its dark color; the fragrance of the magnolia, azalea and clethra, tend to obliterate the memory of clouds of mosquitos and dripping perspiration and draw the naturalist back again and again to this wonderful wilderness." . . . Apparently these early visitors were in love with the Pine Barrens, too.

The whole area still remains a wilderness only because the land is too poor to farm. There are hundreds of narrow dirt roads running through the forest of pitch pines and scrub oaks, some leading to small towns, some leading to towns long abandoned and some leading nowhere at all. Though several modern highways now criss-cross the area there has been little change. There is a wilderness beauty, a lazy sleepy mistique about the Pine Barrens that is felt more than seen.

If the Pine Barrens are entered from the north or west, as they usually are, it is not long before it is apparent that a curious thing is happening. The

trees are becoming smaller. Instead of rising fifty or sixty feet into the air they rise to only half that height until the area known as "the plains" is reached where they are only four or five feet high. There are whole forests of these dwarf pines with their miniature cones; twenty or thirty thousand acres of them. It is like suddenly coming upon another world. No one has yet determined with certainty how these dwarf forests developed but the consensus is that they are the result of wild fires that have swept the area for centuries until they have almost become a separate species.

This coastal plain has always attracted the attention of naturalists because of the striking differences that are presented by its plant life as compared with that to the north and west of it. It is as though a bit of the southern states had been transported northward. Its climate in winter is certainly milder with rarely a heavy snowfall.

There are over five hundred species found in the Pine Barrens of which plants of the bog and swamp predominate. The wonder is how anything but the lowest forms of vegetation can grow here at all, for the soil is so woefully lacking in all the basic elements needed to sustain plant life. There are several reasons that may explain this.

There is a high water table under much of the Pine Barrens, in some areas only a foot or two below the surface, easily accessible to plant roots. Also it is known that certain mycorrhiza inhabit the root systems of many of the Pine Barrens plants such as *Pyxidanthera barbulata* as well as many of the ericaceous plants found there, furnishing some of the nitrogen needed to sustain them. Then too, the climate is such, hot and humid during the summer months, that mineral and vegetable matter decompose at a high rate resulting in a meager sandy soil containing small amounts of organic material in various stages of deterioration.

The Pine Barrens is a place of marked contrasts. In many instances the transition from the hot dry sands to the deep green shade of the bogs may be only a matter of yards, separated by a grassy stretch or a heavy thicket of mountain laurel, *Kalmia latifolia,* often mixed with the sheep laurel, *Kalmia angustifolia.*

In the open stretches between the pines the sand myrtle, *Leiophyllum buxifolium,* is found. This good-natured shrub, appropriate for the rock garden, is easily grown.

Along the sandy wagon roads and in the open places of the plains, which is something of a misnomer for they are the highest part of the Pine Barrens, the tiny creeping shrub, *Pyxidanthera barbulata,* is most frequently found; often small plants of various sizes here and there in the middle and along the sides of the roads or sometimes forming large mats covering two or three square feet. This gem of the Pine Barrens, never more than an inch above the ground, whose dark green small leaves turn to dark red in the fall, is abundant in places but localized as are many plants of the Pine Barrens. It resents moving and is difficult to grow.

There is one other species, *Pyxidanthera brevifolia,* smaller in all its parts, that is found in the Pine Barrens of North Carolina. Somewhat less attractive, it has never appeared in the Pine Barrens of New Jersey.

The ground under much of the pine forests is carpeted with large masses of the bearberry, *Arctostaphylos uva-ursi, Gaultheria procumbens* and many

other acid-loving woodland plants. But it is in the wet lands that the largest number of plants are found, the sweet pepperbushes, magnolias and the myriads of bog orchids.

No account of the Pine Barrens would be complete without some mention of the towns that are scattered throughout the forest. The largest town is Chatsworth with a population of about three hundred; a quiet old town in the middle of the pine woods.

The Pine Barrens towns reached their peak around 1860 when small iron foundries, glass factories and saw mills were active. There were even a few small paper mills. These are all gone now and many of the towns are gone, too. Towns like Calico and Harrisville and Munion Field were all abandoned and have disappeared as the economy changed and the era of iron in the pines ended. The charcoal to fire the furnaces and the sandstone-like bog iron of the Pine Barrens were no match for the bituminous coal and iron ore that were discovered in Pennsylvania. So the iron towns vanished and the Pine Barrens gradually settled back to the few blueberry packing plants and cranberry bogs of today.

The mood of the Pine Barrens is that of a sun-drenched country. The pines offer only partial shade. Even a cloudy day seems bright. The quiet and solitude here give a certain sense of mystery to this wilderness, its towns and its people.

Spring brings color to the Pine Barrens. The bogs come alive and the yellow of the heath-like *Hudsonia ericoides* lines the roads while the bird's-foot violet, *Viola pedata,* appears in such great numbers in some areas that it is almost an unbroken sheet of blue.

Summers are more subdued but the fall brings that most beautiful of eastern asters, *Aster spectabilis,* and in the damper places the lovely Pine Barren gentian, *Gentiana autumnalis,* which is becoming increasingly hard to find due to the depredations of plant hunters.

The Pine Barrens cover a large area and one dirt road running through the pines looks much like any other. For the unacquainted it is very possible to wander around for days in search of plants that will never be found.

Nowadays I do little collecting, content to visit the various colonies of plants that I have known so long and well or just ramble around and enjoy the quiet beauty of the pine woods.

I recall a visit to the Pine Barrens with a friend of mine on a day in late February. The winter had been long and tiresome. It was one of those fine days that happen before the winter closes in again. We went to a place I know where the Pyxidanthera grows in great mats. We had packed a nice lunch and a very good bottle of wine. The sands were warm and the air was balmy with the pungent scent of the pines. Overhead there was not a cloud in the sky. It may have been the day or the agreeable company or the wine, but I cannot remember ever having seen the Pine Barrens look more inviting.

* * * * *

PLEASE . . . . — Avoid disappointment by following directions carefully concerning requests for seed. It is of great importance to observe deadline dates.

NEW SPECIES AND TAXONOMIC REVISIONS OF THE GENUS *SEMPERVIVUM*

ALBERT DE MEZEY, *Victoria, B. C.*

The publication of a Monograph in 1932 by Dr. Praeger was badly needed to clarify the confused nomenclature and widespread synonymy of this popular genus. This fine work is not entirely without omissions and appears to have ended somewhat abruptly, but with frank admission that more fieldwork and study is needed, particularly in the Caucasus, the Balkans and in Spain, from which territories discoveries of new species may be expected.

These assumptions appeared to be correct and during the decades following, not less than 20 new species and varieties have been found and described from the indicated areas. Besides the new discoveries additional habitats were found of several already known species and several new forms were collected. The polymorphic nature of Semperviva was evident; isolated groups of mountains had distinct forms and varieties of their own in most cases. Sufficient material was available for continued study and observations to clarify the unclear status of a number of species previously alternating in lists of synonyms.

The credit goes largely to Dr. Giuseppi, Dr. Seligman, W. E. Th. Ingwersen, the Rev. Thompson and their companions for the arduous excursions to the Caucasus, the Balkans and Spain and to Dr. Wale and Dr. Turrill, all of England for the subsequent classification of the collected material and the descriptions of new species which are outstanding in clarity and comprehensiveness. It is gratifying to see these original descriptions both in Latin and English appear in the *Bulletin* of the Alpine Garden Society of England instead of in some little-known purely botanical publication. It would be good to see original descriptions of new species appear in the *Bulletin* of the ARGS as well.

In the garden, diagnosis is easy only of those sorts which possess unmistakably distinct features. Many are distinguishable during the growing season only, others only when flowering, but some require the most careful observation throughout the entire season, or for several seasons to arrive at reasonably definite conclusions. Pot grown single rosettes in fertilized soil, even in flower, should not be used for identification purposes. Semperviva lose their specific characters easily under such conditions. Although the main diagnostic features of plants are generally based on the structure of the floral parts, Semperviva have specific additional diagnostic characteristics such as the flowering stem and its leaves, the rosette, the habit of the clump, stolons and offsets. The diagnosis of hybrids with few exceptions is largely guesswork even for an expert. Preserve reliable labels carefully. Before their deterioration substitute with copper strips 1/2″ wide with 3/16″ letter punch writing. Abbreviations are better than code numbers or letters which are easily mixed up.

Renewed interest is appearing in the classic hybrids and the various natural and horticultural forms of *S. tectorum* under their original but botanically invalid names. This is understandable; the genus has "made the grade" and has a horticultural section of undeniable merit.

It would be beyond the scope of the present article to give full descriptions for these would have to be sufficiently detailed to be of use; or to go into a history of the repeated changes in prior nomenclature.

Praeger touched *S. caucasicum* but lightly, treated *S. reginae amaliae* as a synonym of *S. marmoreum,* omitted *S. globiferum* and regarded *S. zelebori* as a synonym of *S. ruthenicum.* The status of the last three species stands changed as to date, as shown in the following paragraphs, presenting the new species and varieties based on geographic distribution, also noting the taxonomic changes.

MACEDONIA

This name is used to denote a historic and geographic territory. The area is now divided between Yugoslavia, Greece and Albania.

S. ballsii Wale	flowers dull pink
S. thompsonianum Wale	flowers yellow, rose center stripe
S. octopodes Turrill	flowers yellow
S. o. var. *apetalum* Turrill	flowers yellow (no petals or petals deformed)

S. reginae amaliae of this territory was originally a synonym of *S. heuffelii,* apparently the true plant was unknown or unnamed at that date. Praeger placed it in synonymy with *S. marmoreum* Griesb. (formerly *S. schlehanii* Schott.). After extensive collections in its expanded habitat it stands now as a valid species in its own right.

S. zelebori Schott. was regarded by Praeger as a synonym of *S. ruthenicum* Koch. It is advanced now to specific rank after closer study of material from several habitats, apparently confined to Serbia.

THE CAUCASUS

The name is used as a geographic definition including adjacent Anatolia (Armenia, Turkey).

S. altum Turrill	flowers pale purple
S. ossetiense Wale	flowers white, purple base
S. ingwersenii Wale	flowers rose
S. borissowae Wale	flowers tyrian rose
S. minus Turrill	flowers pale yellow

S. m. var. glabrum Wale and 4 distinct forms of *S. minus*

S. glabrifolium Borissowa flowers yellow

S. sosnowskyi Ter. Chat. (Semp. Section Flora U.R.S.S. 1939)

4 distinct new forms of *S. pumilum* M.B.

Of the previously known Semperviva found in the area, *S. globiferum* was regarded by Praeger as a synonym of *S. ruthenicum* Koch.

Later reclassifications placed *S. armenum* Boiss. in prominence as the central type of the Anatalian Semperviva, submerging into it the former species *S. vincentei* Pau.

S. globiferum L. was returned later again to specific rank, but under a new name: *S. transcaucasicum* Muirhead (1965)

The lumping of *S. ruthenicum* of mainly eastern European distribution into *S. armenum* of Asia Minor appears to be somewhat arbitrary and in contradiction to the reasoning on which the separation of *S. zelebori* from *S.*

ruthenicum was based, on geographic rather than morphologic considerations. There are four other undescribed species under further study from this area.

SPAIN	
S. andreanum Wale	flowers pale rose, red base
S. cantabricum Hub.	flowers rose pink
S. giuseppii Wale	flowers rose red
S. nevadense Wale	flowers rose red
S. n. var. *hirtellum*	flowers rose red
S. vincentei Pau.	

There are three unnamed species awaiting identification.

The status of *S. giuseppii* is under investigation, suspected of being a natural hybrid of *S. cantabricum* and *S. arachnoideum.*

S. vincentei Pau. appears to be a description record only. Several searches have been made in its habitat, the Picos de Urbion. A plant was found clearly distinguishable from *S. tectorum* but the description of *S. vincentei* does match this plant.

The latest reclassification of the Jovisbarba section originates in Germany. The Diopogon subgenus is split into two species on the justifiable grounds of distinct differences: *S. heuffelii* Schott. multiplies by splitting of the rosettes at the crown, while the other members of this subgenus form new rosettes from the leaf axils on slender threads.

Diopogon heuffelii Schott. is now listed with seven varieties (former synonyms). In nature it is an extremely variable plant.

Diopogon hirtus is now the new name of *Sempervivum hirtum* regarded as the central type of its allies. Five forms of it are described differing in minor characteristics. Former synonym *S. neilreichii* is raised to varietal rank. Submerged into the above as subspecies are: *S. allionii, S. arenarium,* and *S. borealis.* The last is the new name of *S. soboliferum.*

As explorations continue in old and new habitats and as studies progress in the substantial still unidentified collected material, we may expect to hear of additional novelties in the future.

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IMPORTANT NOTICE RE: SEED LIST REQUEST—Please consult insert in the current *Bulletin Board* for a change in procedure. Overseas members and 1972-73 donors will automatically receive the Seed List. Others must request it by filling out the required form. This is expected to be a permanent change. For the benefit of all members, it should be explained that donor privileges are not carried over from year to year. To be a recipient of donor privileges you must contribute seed to the current Exchange.

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SUGGESTIONS FOR DONORS TO SEED EXCHANGE —

1. PLEASE clean seed very carefully for distribution.
2. It will be greatly appreciated if you type or print in block letters the name of the seed. This saves much time in trying to determine spelling. This point cannot be overstressed.
3. Seal the packets containing seed very carefully. Much seed is lost through leakage.

SOME ROCK GARDENS IN ITHACA, NEW YORK

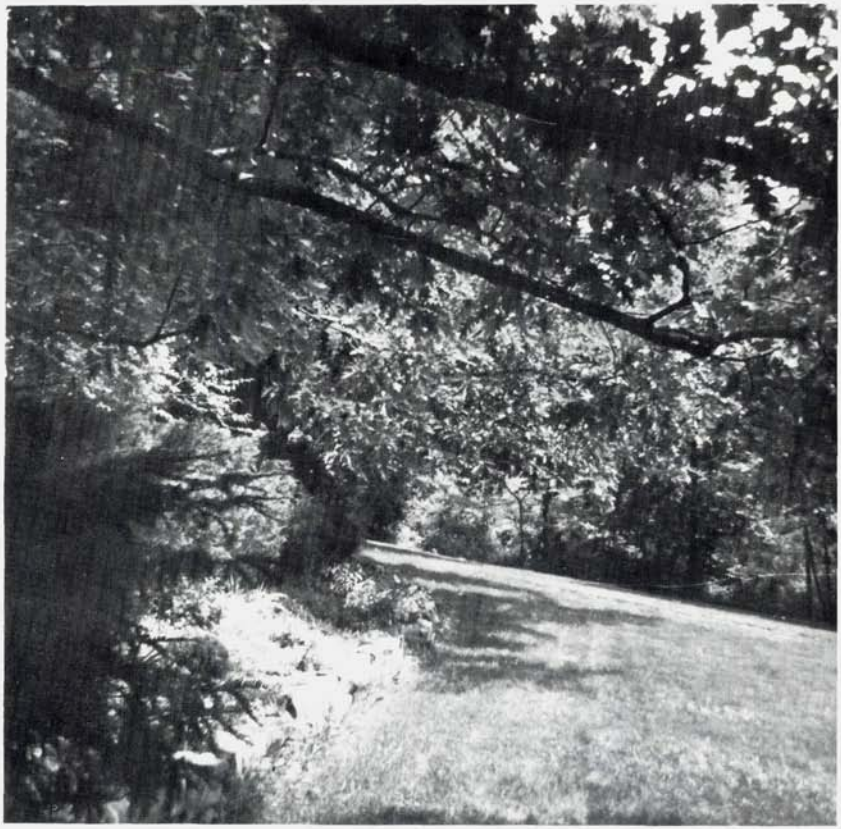
MARY TIBBETTS FREEMAN, *Ithaca, New York*

"It is not enough to grow plants;" Elizabeth Lawrence tells us in the Preface to *The Little Bulbs,* "really to know them one must get to know how they grow elsewhere . . . From putting together the experiences of gardeners in different places, a conception of plants begins to form. Gardening, reading about gardening, and writing about gardening are all one; no one can garden alone." Canon Ellacombe, at the beginning of his notes on a year *In a Gloucestershire Garden,* voices the corroborative belief that "no one with a love for gardening who visits other gardens with his eyes open can ever go into a garden . . . without learning something."

Gardeners and rock gardeners especially will generally allow a ready "amen" to the statements of Miss Lawrence and of the good Canon who played so significant a role in directing the interests of the young Mr. Bowles toward gardening. Garden visiting is one of the most stimulating and rewarding of garden exercises as well as one of the most pleasant, and this conviction moves me to feel that rock gardeners in other areas may have some interest in reading about some of the several rock gardens in and around Ithaca, New York.

First, a word or two about Ithaca. Located at the southern end of Cayuga Lake, the second largest of the Finger Lakes of central New York, greater Ithaca sprawls over steep hillsides which enclose the lake on three sides. The soil on these hillsides is shallow and mainly clay and shale, sticky and slippery when wet, hard as cement and given to cracking open when dry. Both summer and winter seasons are jarred by sudden storms and high winds; in summer there are often hot, dry spells when the temperature is in the nineties and the humidity is equally high; in winter temperatures tend to oscillate between unseasonably high and unseasonably low, at times reaching 20 to 25 degrees below zero, and as a rule the snow cover is uncertain. Spring is brief and very fleeting; autumn, generally the pleasantest time in the year, is frequently dangerously dry. And sunshine in all seasons is sparse. All in all the area is not one where nature makes it hard not to garden. Yet in and around Ithaca there are some excellent rock gardens, some larger, some smaller, and the area rock gardeners grow a surprising and distinguished variety of alpine, woodsy, and other unusual and difficult plants.

Mrs. Ruth Ware has been rock gardening in Ithaca for about three quarters of a century but in her present garden for only about twenty-five years. Her garden is small and in many respects the simplest form of a rock garden. It stretches along the upper edge of the lawn for about two rods and is separated from the street above it by a narrow planting of forsythia, juniper, and two or three oaks. In depth it reaches up and backwards for about three feet; along the front a low foot-high dry wall raises it above the lawn, making both for easy maintenance and for close-up enjoyment of the plantings. The exposure is due west, but the house, standing between, protects the garden from the direct glare of the sun and from prevailing winds. In the garden itself few rocks are used; the space is too small. Those that are found usually serve a special function, such as providing a secure root run for some such treasure as *Iris*



Looking south across Mrs. Ruth Ware's rock garden.

The Author

gracilipes. A rock mulch, however, covers the whole garden bed, helping to conserve moisture, to prevent erosion, and at the same time to keep the blossoms clean and unsplattered.

But although small, Mrs. Ware's garden is full of good things. From earliest spring to late autumn something of interest is in flower or color, from March's first blooming Irises, *I. histrioides* 'Major' and the Reticulata group, and *Narcissus asturiensis* until the pink and lavender and blue autumn Crocus and *Ceratostigma plumbaginoides (Plumbago larpentae),* splashing its rich red autumn coloring along the foot of the wall, close the season in late October and early November.

There are many bulbs — "little" bulbs, as is proper in the limited space —a few of most varieties of dwarf and miniature Narcissus, both species and named clones; two or three each of many of the small species Tulips; and many more. Primroses, too, are well represented; *P. juliae,* the species, and several hybrids; *PP. acaulis, frondosa, marginata, denticulata, sieboldii,* and several polyanthus. *Trillium nivale* and *T. rivale,* double Bloodroot, *Erythronium hendersonii* and *E. oreganum,* the brilliant pink double Hepatica, and *Viola pedata bicolor* hurry the season along together with the Pasque Flower

in both the purple and the white, mats of *Androsace sarmentosa* and *A. s. chumbyi,* and the Dicentras, *DD. formosa, oregana,* and *eximia.* There are many Dianthus, *DD. alpinus,* and 'Sammy' among others, and *D. neglectus,* the true form which blossoms regularly and sets seed which Mrs. Ware scatters in the vicinity of the parent plant and in this easy way year after year raises a clutch of sturdy seedlings.

Draba olympica and *Douglasia vitaliana* in broad cushions blossom freely. Here, too, are *Geranium renardii* and *G. subcaulescens,* and mossy saxifrages, red and white — all grown originally from seed, for over the years Mrs. Ware has raised many of her own plants. *Aethionema* 'Warley Rose' in an unusually good form and color both of foliage and flower was one of the first plants Mrs. Ware bought when she started this garden twenty-five years ago; the original plant is still with her. Of Campanulas there is almost a roll call — *CC. aucheri, barbata* (which Mrs. Ware keeps going with seedlings raised in the same way as those of *Dianthus neglectus*), *carpatica* (blue and white), *collina, cochlearifolia, garganica, muralis, rotundifolia* (lovely, dainty, and not allowed to take over), and *turbinata. Gentiana acaulis* is present and blossoms but shyly; *G. septemfida* and several of the Himalayan species are more generous with their bloom and make bright patches of blue in August. In the fall the cyclamen are gorgeous, first *C. europaeum* and then *C. neapolitanum,* both pink and white. *Sempervivum arachnoideum* grows here and there in the face of the supporting wall and finds the protection it needs to form handsome clumps of tightly cobwebbed rosettes.

Mrs. W. T. Miller's rock garden is built upon a sloping bank at the eastern and northern reach of the property and curves and deepens northward and then sharply west in a lop-sided arc to face the south. A paneled fence toward the street on the east, a row of pyramidal yews across the height of land at the back to the north, and a single large Scotch pine, standing at the western edge where the land falls steeply, frame the garden and limit it, and at the same time, shelter and protect it from the buffeting, raking winds which rush unstayed toward it down the forty miles of Cayuga Lake. Small and confined, nevertheless the rock garden makes a tremendous contribution landscapewise and affords a superb example of how a rock garden and rock garden plants can be used to contribute distinction and beauty.

Structurally, the garden rises slowly as the curve begins, deepening upward, then broadening and spreading behind the fence which here bends northwestward and ends. Rocks are used, in varying sizes and in moderation, more as auxiliary to the garden and plantings than as essential to plan and design. In this capacity they suggest turns, contribute to a change in level, or give cultural aid to a plant. Throughout, the rocks are played down; their function is to contribute rather than to dominate. At the edge of the lawn, near the center of the arc, a slight path enters the garden, branches, and turning, climbs. The skillfully controlled changes in levels give a depth to both garden and lawn which is central to the whole effect, since the rock garden is seen every day in the year, from the window-wall of the living room, across the lawn, from a distance. Without this perspective both garden and lawn would be foreshortened. As it is, through it and through thoughtful siting of carefully chosen plant material, the rock garden provides a pleasant and colorful aspect twelve months of the year.

In respect to plantings, Mrs. Miller's garden offers not only a good variety of alpines but also a fine example of the success which can be attained through right plants rightly used. In every way the plants are suited to the size and prominent location of the garden. Throughout, the planting scheme gives a balanced and pleasing effect. So dwarf evergreen shrubs provide character and body when the garden is seen from a distance; *Bruckenthalia spiculifolia, Berberis candidula, Cotoneaster horizontalis* 'Little Gem,' *Daphne cneorum marginata, Spiraea bullata, Leucothoe keiskei.* In bloom, the dwarf Rhododendrons, *RR. obtusum, racemosum* and 'Ramapo,' serve as brilliant accents. Shrubby creepers provide richness in color; *Dryas octopetala* and *D. o. tenella, Arctostaphylos uva-ursi* (which Mrs. Miller calls "kinnikinnick"), *Gaylussacia brachycera,* and *Vaccinium vitis-idaea.* Variation in form and textures is added by selected dwarf conifers; *Chamaecyparis obtusa caespitosa, Picea glauca conica, Thuja occidentalis minima.* Fifteen different varieties of Callunas and Ericas ensure a long period of bloom and colorful foliage and interesting texture throughout the year.

Bulbs and alpines are also in good variety, for both display and succession of bloom. The bulbs are little and early; *Puschkinia, Scilla tubergeneana, Anemone blanda, Iris histrioides* 'Major', species crocus, miniature narcissus and species tulips. Rock plants show an admirable balance between those selected as being effective for distant viewing or close-up inspection. *Phlox divaricata, P. subulata alba* 'White Dot,' and *P. procumbens* 'Lavender Lady' all make a brilliant showing. *Potentilla tridentata, Hutchinsia alpina, Anemonella thalictroides* are better appreciated close at hand. *Iris tectorum* (both the blue and the white) offers a quieter beauty than do the six or eight different colors of dwarf Bearded Iris. *Anemone pulsatilla* in both a clear red and a handsome very dark purple form are striking both in color and in seed; *Aquilegia flabellata nana alba, Anacyclus depressus, Jeffersonia diphylla, Mazus reptans, Corydalis lutea* and *Campanula cochlearifolia* and *C. poscharskyana* are equally lovely but in quite a different fashion.

The main part of Mrs. Herbert Brigg's rock garden spreads across a natural slope which rises sharply beside the house to the east. A low dry wall, well planted with thyme, Campanulas, assorted Sempervivums, *Draba aizoides,* and *Dianthus neglectus* lifts the garden above a flagstone terrace which opens off the living room. Over the years the *Dianthus neglectus* and *Draba aizoides* in the wall have seeded down here and there among the flagstones, and in blossoming time the pink or yellow blossoms on the terrace floor look up at those in the wall and seem almost to be a reflection. Two paths angle up through the changing levels of the garden to disappear into the woods which stand above and behind. Loosely hedged dwarf yews along the top act as a backdrop, separating the plantings from the wildness beyond. Although here and there the dark green, velvety rosettes of *Ramonda myconi* crown a north-facing simulated fissure, or a shrubby Penstemon or a cascading Campanula sprawls most happily over a small fabricated ledge, or *Sedum pilosum* or *Primula marginata* flourishes in a contrived crevice, use of rocks in the garden is limited. A layer of stone gravel gives coolness to the face of the garden and a chance for a firm root hold to many a little Androsace or Saxifrage. To the south, two cherry trees, one half way up the garden slope, the other marking the end of the dry wall at the reach of the terrace, lift large heads high above

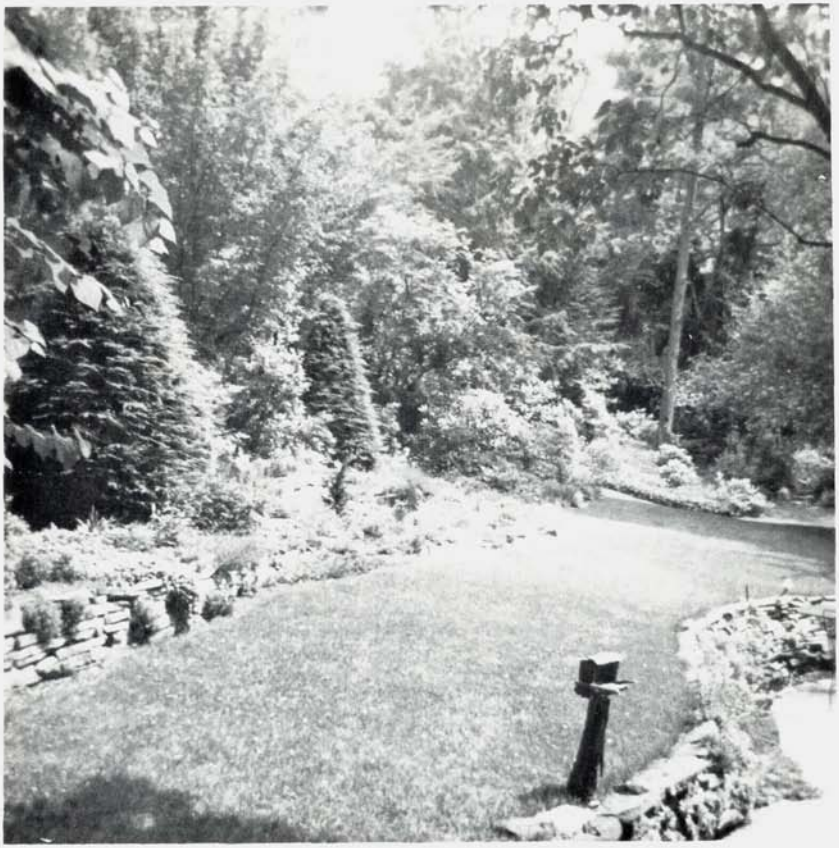
the garden and limit the mid-summer sun. European ginger borders the southern side of the terrace beyond; the sharpness of the slope eases off. The garden, following, drops its ordered plan and, among young hemlocks and a tamed plantation of young native deciduous growth, becomes wild. The effect is altogether delightful and charming.

In both the main garden and the wild garden Mrs. Briggs grows a most interesting and representative collection of plants. The steep shade-dappled hillside of the main garden provides growing conditions pleasing to many alpines and at the same times makes possible near eye level enjoyment of the fascinating detail of each particular small plant. Saxifrages of all sections are present in good variety and quantity, and *S. 'Cranbourne'* in particular has been thriving and blossoming freely for six or seven years. *Silene acaulis, Bellium minutum,* the farinose and auricular primroses, and some of the Androsaces *(A. sempervivoides, A. lactea,* and *A. lanuginosa)* are all very much at home, and *A. sarmentosa* spreads about so lavishly that it has to be disciplined. *Asperula pontica* and *A. hirta* form attractive mats; *Erinus alpinus* (the white as well as the pink) blossoms and seeds freely; *Corydalis cheilanthifolia, Papaver alpinum* and *Dianthus alpinus* all thrive; *Campanula garganica alba, Symphyandra wanneri* and *S. hoffmannii, Saponaria ocymoides rubra compacta, Geranium dalmaticum* and a dwarf form of *G. sanguineum* bloom well over a long season. And *Genista dalmatica,* all golden when in blossom, flourishes on the well-drained hillside. *Dryas octopetala, Lithospermum zollingeri,* and several Helianthemums together with *Cotoneaster adpressa* and a few dwarf, needled evergreens give year 'round color and interest.

A colony of *Cyclamen neapolitanum* naturalized near a hemlock marks the transition from the main to the wild garden. Here the plantings are informal, in drifts or groupings, on either side of a slight path; Hepaticas in several colors, *Mertensia primuloides,* Bloodroot (both single and double), Jack-in-the-Pulpit, *Dodecatheon meadia, Tiarella cordifolia, Dicentra cucullaria,* and *D. canadensis, Anemone nemorosa, Phlox adsurgens* and *P. stolonifera* 'Blue Ridge,' several kinds of Epimediums, *Cornus canadensis* (which blooms and sets berries), *Trillium grandiflorum* (both the fully double and single forms), *Andromeda polifolia nana, Vaccinium vitis-idaea,* and *Diapensia lapponica* which after a settling-down period now feels happily enough at home to blossom. At the foot of the slope, the path and plantings disappear in a sweet disorder of primroses — *Primula japonica, P. sieboldii, P. polyanthus, P. sibthorpii, P. acaulis, P. denticulata* — growing in clumps or singly, seeding themselves about under the native honeysuckle and the gray-stemmed dogwood, everywhere.

From the terrace at the rear of the home of Professor and Mrs. Robert J. Lambert, Jr., the whole back yard seems a single garden, so skillfully have two rock gardens, pretty spaces of lawn, fine trees, pleasant flowering bushes, and clumps of well-chosen plants and shrubs been combined into a picture of unity and beauty. The area is small — an average size city lot — yet nothing looks crowded or out of place; all is easy and pleasant and pretty. Although the plantings are carefully designed to contribute to the picture as a whole, each of the parts is a small garden complete in itself, and in itself interesting and enjoyable.

The Lambert's garden lies across a rolling slope characterized by levels



Prof. and Mrs. Lambert's "large" rock garden and below, a section of the wall garden.
The Lamberts

changing up and down, but having in general a western exposure. The stone dry wall which forms a semicircle around the terrace rises as it cuts into the hillside and then lowers again as it curves westward toward steps leading to the plantings above. Beyond the steps at the end of the wall and terrace and in clear view of the kitchen and dining room windows, a small enbankment closely planted with modest Sedums and Sempervivums becomes in the earliest spring, before the rest of the garden is awake, an island of color as hundreds of snow crocus burst into the glory of bloom. Plants growing in the wall — *Cytisus kewensis* — a wealth of blossom in the spring — *Erodium chrysanthum, Phlox subulata, Campanula garganica* — a shower of blue stars in the summer – and Sedums and Sempervivums in assorted varieties and colors soften the severity of the walling and make the wall garden, although separated from it by a strip of lawn, seem part of the rock garden above.

This first rock garden, built for and planted with the "larger" rock plants, those reaching in height or in spread 10 to 12 inches, slightly more or less, spans the brow of the northward slope, from west to east. Its length is probably about twice its depth, but the garden throughout is so well composed and

beautifully grouped that actual measurement is of no importance. Professor Lambert is an artist and in creating both rock gardens brought to their construction not only an eye trained to perceive pictorial effect but also an artist's feeling for the right movement of line and form and group. So this "large" rock garden (actually in size it is the smaller of the two) comes forward from a mixed irregular border planting of hemlocks, yew, laurel, Ilex, deciduous Azaleas, tree peonies, and other shrubs to step out and down into the lawn as an apparently natural outcropping. The facing of the rocks is angled slightly northwestward, and every group of stones is shaped and proportioned to give the desired effect both in itself and in relation to the whole.

The angles and corners, nooks and crevices which rise so naturally from the meetings of the rocks provide many spaces for rock-loving plants, and to fill these Mrs. Lambert, as gardener, has selected a goodly collection of dwarf shrubs and alpines. Throughout, the planting has been carefully directed toward complementing and not hiding the rock work. In the choice and siting of the plants, also the texture, color, and growth pattern of the plant have all been taken into consideration, both in itself as well as in relation to what is growing near. A pleasing and lovely picture results.

In the spring various "little" bulbs make brilliant patches of color among the basic greens of dwarf, needled evergreens and flowering shrubs — Daboecia, Iberis, Ericas and Callunas, *Daphne arbuscula,* Helianthemums and *Dryas sundermannii.* Next comes Arabis, the carpeting Phloxes *(Phlox brittonii rosea), P. procumbens* 'Millstream,' *P.* 'Rormsdorf Beauty' and the Aubrietas. The dwarf Bearded Irises follow, then *Aethionema pulchellum,* and *A.* 'Warley Rose,' fairy-like Aquilegias, several kinds of dwarf Dianthus, *Geranium sanguinium, G. traversii,* and *G. subcaulescens splendens,* and the Veronicas, *V. spicata,* and *V. prostrata. Campanula garganica, C. nitida alba,* and *C. carpatica* and several of the tribe of Alliums provide color over a long season. *Spiraea japonica* and *S. bullata* give mid-season interest, and a representative number of Penstemons distinguish the planting — *P. richardsonii, P. barbatus* 'Rosy Elf,' *P. caespitosus, P. hirsutus albiflorus,* and *P. pinifolius.* In September come the dwarf Asters such as 'Snowball' and 'Blue Glitter' and finally, to close the season, autumn Crocus and Colchicum.

Beyond the "large" rock garden, groupings of Rhododendrons and Azaleas, underplanted with *Vinca minor,* lead along the slope then form a green corner around and down the hillside, through a small woodland garden, past a little pool which rises at the foot of a sudden knoll like a forest spring, and through a planting of heather to the second rock garden, the "small" rock garden where grow the treasured tiny "Children of the Hills." Here again in construction the garden represents a natural outcropping, the steeply jutting face of a deep-running vein which upholds on its back the eastern rise of the hillside slope. The exposure is south and since the garden angles gradually several times from west to east, there is no feeling of flatness; rather, because of the turnings, the garden seems larger than it really is. Again Professor Lambert's artist's eye has molded rock into harmony of line, form, and group. From top to bottom the garden is crossed with slopes and rises, screes and upland meadows — all in miniature, all in perfect scale, proportion, contrast, balance; a series of tiny landscapes each separate and yet all joining together to make a picturesque whole, fascinating in detail and sensitive in composition.

The changing levels, numerous ridges and hollows, sloping banks, and numberless crannies and fissures provide homes where many alpines can nestle among the rocks, some to revel in the sunshine, others to take their ease in the shade. Again Mrs. Lambert has so designed the planting that rock work and plant material combine to create beauty and at the same time each small plant has room in which to be seen and appreciated. Here grow many saxifrages — the Kabschias, Englerias, and Encrusted, and many a Mossy if only the robins will leave them alone. *Primlua juliae* and *P. farinosa* scramble over the rocks; Drabas give early color and interesting texture throughout the season. Gentians grow and blossom generously *(G. acaulis, G. parryi,* and *G. lagodechiana)* as does the lovely rose pink *Centaurium scilloides.* Here, too, can be found the choice little Campanulas (if the slugs have not found them first: Mrs. Lambert wages a constant battle) — *C. pilosa, C. muralis, C. sartori, C. mollis, C. raineri, C. portenschlagiana* — and the low-growing shrubby Veronicas *(V. satureioides* and *V. gentianoides nana), Douglasia vitaliana, Silene schafta,* little fairy-like Astilbes, *Trollius pumilus,* and *Arenaria montana. Viola jooi* seeds itself around generously in the most charming manner; in the summer Talinums, strange seemingly rootless plants which are also free seeders, gaily give late afternoon bloom. Here and there a very dwarf, needled evergreen, globe-shaped or conical, affords contrast of shape or size or casts a small protecting shadow through part of the day. Many Lewisias and Penstemons in particular Mrs. Lambert has raised from seed — *P. newberryi, P. tolmiei, P.* 'Six Hills,' *P. davidsonii, P. serpyllifolius.* Happily they scramble along, find root holds in side hill crevices, among the rocks, or dangle above miniature cliffs. In blossom time the garden is lovely and brilliant; toward the end of summer the beauty and interest derives from variations of foliage and texture; always there is something to see, something to admire and enjoy.

* * * * *

TWO LANDS AND ONE SPECIES — Margot Stuart of Pitlochry, Scotland writes: "At the end of a perfect day photographing plants, many of which were known to me only by repute, in the Wenatchee Mountains, our steps were hastening back to camp with the thought of "Happy Hour" — that delightful Northwestern custom — foremost in our minds. As I hurried on my attention was arrested as I passed a familiar plant. I stopped, looked back and there on a wet mossy stone set into the hillside beside the path was growing *Pinguicula vulgaris.* The plants at the top of the stone were in bloom. They descended in a cascade of diminishing sizes to minute seedlings at the base clasping the moss with their flat sticky leaves. Kneeling down to admire this perfect planting I was transported five thousand miles to my Scottish garden, recalling a similar moss-covered stone by a stream where these shy violet-like, moisture-loving flowers are planted: but without the artless artistry of the group before me. The story turns full circle. As I write this note, *Pinguicula vulgaris* is in bloom in my stream. Once more my thoughts return to a perfect evening in the Wenatchee Mountains."

GEORGE FORREST (1873-1932)

P. J. W. KILPATRICK, *West Linton, Scotland*

George Forrest, the well-known plant collector, was born in Falkirk in Scotland on 13 March 1873.

After living in Australia for some time he found that prospects for advancement were slight, so he returned to Scotland, having spent some time in South Africa on the way.

He took a minor post in the Herbarium of the Royal Botanic Garden, Edinburgh until something better turned up. His experience in handling herbarium specimens was to prove of inestimable benefit to him in the future, although at the time it was merely a temporary employment.

In 1904, Mr. A. K. Bulley asked Sir Isaac Bayley Balfour, the Regius Keeper of the Royal Botanic Garden, Edinburgh to recommend someone for a botanical exploration in Western China. Sir Isaac named George Forrest who was appointed.

In eight expeditions, centered in Yunnan but including alpine Burma, South-Eastern Tibet and Szechwan he sent back more than 31,000 herbarium specimens. Professor Kudo of Japan, after visiting over 40 of the chief herbaria in Europe, Asia and America, described Forrest's herbarium specimens as "die beste in der Welt."

He was particularly interested in the genus Rhododendron of which he made 5,375 numbered gatherings of seed. From these, 12 received First Class Certificates from the Royal Horticultural Society, and no fewer than 48 received Awards of Merit. He was also particularly interested in Primula and Gentiana; from the latter genus he introduced *Gentiana sino-ornata.*

He trained a band of native collectors and organised the collection of seed in great quantities. He introduced an immense number of plants to Western gardens and many plants were given specific names in his honour.

He was working in an area in troubled times. The Chinese and the Tibetans were at war with each other, and it was difficult for a European to travel in those parts. On one occasion he was pursued by Tibetan lamas, who wanted to kill him. For eight days he was chased and had practically no sleep and survived on a dozen ears of wheat and a few dried peas which he had found. He even had to bury his boots in the bed of a stream so that he could not be traced by his footprints. He was lucky to escape with his life.

He died on 5th January 1932 at Tengyueh while shooting towards the planned end of his last expedition.

The tragedy was that he did not have a period of retirement in Scotland to write about his travels and plant introductions. He published little during his lifetime. The three papers that he is known to have published were reprinted in a Memorial Volume published by the Scottish Rock Garden Club in 1935. It is hoped to re-issue this volume in celebration of the Centenary of his birth.

SCOTTISH ROCK GARDEN CLUB

(Editor's Note) — What Reginald Farrer is to the English gardeners, George Forrest is to the gardeners of Scotland. The year 1973 marks the Centenary of Forrest's birth. The Scottish Rock Garden Club is planning a fitting tribute to this great plant collector to whom the gardeners of the world owe so much. Details follow:

In 1935 The Scottish Rock Garden Club published a volume in memory of George Forrest V. M. H. who died in 1932. Only a small number of copies were printed, and the book has become something of a collector's piece.

Since the Centenary of the birth of George Forrest falls on 13th March 1973, it has been suggested that a facsimile reproduction of the original book should be published. This will differ from the original edition only by the alteration of the page of Acknowledgements which gave the name and address of the Secretary. This will be brought up to date and will differentiate the new edition from the old.

The book consists of 90 pages of text and illustrations and will be bound in cloth. The Contents consist of: —

Introduction

George Forrest — The Man
The Field
The Tale of the Years
The Perils of Plant Collecting, an article by George Forrest
Geographical Exploration with Mr. Litton, written by George Forrest
Notes on Certain Forrestian Introductions
Notes on the Plants of N. W. Yunnan, written by George Forrest
Bibliography and References.

There are also 27 illustrations.

A decision will be taken on 1st November 1972 whether to proceed with this publication. This decision will depend on the number of persons who will place a firm order for a copy of the book on the understanding that the price will not exceed £ 1.25 ($3.25) including packing and postage. This price will apply to those who are not members of the Club as well as to members.

No money should be sent at this stage. All that is required is a letter addressed to: —

The Editor, Scottish Rock Garden Club,
Slipperfield House,
West Linton
Peeblesshire, Scotland
EH46 7AA

The letter should merely state that you will place a firm order provided that the cost does not exceed £ 1.25, including packing and postage. Your letter *must* reach the Editor before 1st November 1972.

SOME FLOWERS OF CRETE

LIONEL BACON, *Winchester, England*

Crete, the southernmost of the Greek islands, has a varied and distinctive flora. Furthermore, since there are mountains rising to over 8,000 ft., many of the plants are of interest to the alpine gardener.

This is an account of an all-too-short holiday in which plant hunting vied with the interest provided by the impressive remains of ancient Minoan towns and palaces. My wife and I were there from April 30th to May 15th, 1971—a little later than one would recommend for seeing the flowers, but the Harrogate Conference intervened. There are now jet planes to Heraklion airport, so that for Europeans the island is readily accessible. We hired a car, very moderately priced, and so were able to use our time to the best advantage.

The island is about 160 miles long from east to west, but at a maximum only 30 miles wide. It is in effect a long narrow limestone mountain ridge, sloping steeply to the south and rather less so to the north. The main development is along the north coast, where most of the towns lie, and a good road runs the length of the island. A network of small roads runs up from the north coast into the hills, and a few good roads cross them to reach the south coast. The mountain backbone is not quite continuous, but rises in three main blocks — the White Mountains (Lefka Ori) to the western end of the island, Mount Idha (alias Psiloritis, and not the Mt. Ida of Homer and Tennyson) in the centre, and the Dhikti Mountains towards the east — but there are jumbled hills all the way between these main blocks. One other geographical feature which has a bearing on the flora is the remarkable high, flat, fertile inland plains (Omalos, Nidha and Lasithi) which lie immediately to the north of the main mountain masses.

This is a tale of flowers, but perhaps a word or two about the amenities and possible difficulties for the traveller will not come amiss. Language, of course, can be a problem in any foreign country, and Greek is not an easy one to learn: there is something to be said for trying to learn the alphabet (both capitals and smalls) if only to read the signposts! We usually found someone who could speak English in the hotels; in the small villages, where we generally lunched, it was useful to know the words for 'omelette' and 'wine', but signs and pointing generally got us what we wanted. We only ran into real difficulty once, when we gave a girl a lift in seemingly urgent circumstances and then suffered the embarrassment of discovering that we had engaged a guide! Food in the modern hotels is just 'European' — elsewhere it is an amusing game of try-it-and-see, and be prepared to wait for it. The island is peaceful and beautiful except along the north coast, where building, road-making, aeroplanes and the armed forces are noisily apparent. We voiced our regret at this 'progress' to a young Cretan at the airport: his reply, in perfect English, was cheerfully to the point: "The trouble is," he said, "that tourists don't like tourists!"

Because of the considerable altitudinal range, there can be no one season which is perfect for the flowers of all levels. In early May we found the coastal flora largely finished, and there were arid areas; but at the highest point to which we climbed in the White Mountains there was a good deal of snow.

We stayed first just outside Heraklion. This is an excellent starting point, not only because of its airport and the accessibility of the two best-known Minoan sites, Knossos and Phaestos, but also because it puts one within easy range of the Dhikti and Idha mountains and their associated plains; but for the special plants of the White Mountains one must go further west.

A few miles south of Heraklion lies the little village of Archanes, and over it hangs Mt. Jouktas (2,700 ft.). This proved an excellent first day's excursion, gentle and kind to us after our night flight. There is a rough but perfectly negotiable road almost to the mountain top, running at first between vineyards and then zigzagging up the rocky hillside. We stopped at intervals and hunted for plants. There were many orchids, especially Ophrys: most of them were just going over, but *O. cretica,* distinct and attractive, was still clearly recognisable. The loveliest flower was *Gynandriris sisyrinchium,* which can be a poor thing but here was large and colorful, its violet-blue flowers (short-lived indeed, but at their best in the early afternoon) glowing against white limestone and the rich red *terra rossa.* With it was the rose-red Gladiolus *(G. communis)* and the blue-tasselled *Muscari comosum,* both widespread throughout the Mediterranean area; and at their feet the crumpled rosettes of the Mandrake, *Mandragora officinarum,* each a nest of squashy orange 'eggs', the ripened fruits.

Daphne sericea had still a few late flowers, and here, too, we made our first acquaintance with *Cyclamen creticum.* This is not the most spectacular of the Cyclamen species to be found in the Greek islands: the flowers are rather small, narrow, and of a somewhat insubstantial white; nevertheless, we came to be rather fond of them during the ensuing days. We met them often, frequently in deep shade (and often indeed under spiny bushes where they had escaped the goats) whence they peeped out shyly. Here, too, on Jouktas we found the leaves of the Snake's Head Iris, *Hermodactylus tuberosus:* the flowers were past, but a gathered tuber flowered here in England in January and was of a rather different form from those we had seen before, with the standards (or are they the stigmas?) standing tall, erect and bifid. Upon the top ridge of the mountain, where we looked down from a dizzy height upon nesting eagles, there were three attractive plants which we did not find elsewhere in the island. One was a large-belled Campanula which had a monocarpic look about it. The second was a fine Helichrysum, neat and white in foliage, with shining golden flower heads — it may well have been *H. creticum.* The third was *Alyssoides cretica,* a most attractive plant of whose very existence we had previously been unaware: indeed we thought that *Alyssoides* was a monotypic genus, and *A. utriculata,* with its foliage rather too coarse for the yellow crucifer flowers, and its globular seed capsules, was not our most-loved garden plant. *A. cretica* had indeed the distinctive fruits, but the plant was neat, only a foot or so high, the leaves silver-white and the flowers large and clear yellow.

The day of our visit to Mt. Jouktas (May 1st) was the Spring Festival, and the road to Archanes was crowded with people on foot, bicycles, motorbikes and donkeys, all garlanded with flowers on their persons and vehicles. The main constituent of these garlands was *Chrysanthemum coronarium* and its variety *discolor,* which coloured all the banks and hedgerows; the people

The White Mountains of Crete rise from the high level plain of Omalos

Lionel Bacon

threaded the flowers on a string, making close-packed chains. Everyone was in a festive mood — we found the people gay and friendly not only on this holiday but at all times. Another delightful roadside plant at the lower levels was *Convolvulus elegantissimus,* forming enormous mats and mounds of dissected silvery foliage covered with large clear pink flowers. In the main the spring flowers were over at the lower levels, but we found many of them by the roadsides in the hills. They included *Anemone coronaria* and *A. pavonina,* and the tiny but rather attractive little *A. stellata* var. *heldreichii,* a Cretan endemic with starry mauve-tinged flowers and purple stamens. *Ranunculus asiaticus* we found only in the dwarfer form, with cup-shaped white, rose or yellow flowers — not the large anemone-like form which predominates in Cyprus.

After two nights in Heraklion we visited the eastern end of the island, spending two nights in Sitia. The hills here are lower and hotter, and clothed with 'spinies', among which we recognised *Poterium spinosum* and *Euphorbia acanthothamnos.* We enjoyed our visit to these wild hills, and especially to the Minoan site, still being worked, at Zakros on the eastern coast; but from the flower-hunting point of view it was the less interesting end of the island and we found nothing which we did not also find, fresher and more abundant, in the centre or west.

Returning westward, we visited the Lasithi Plain, famous for its ten thousand windmills. Water supplies are important in Crete, where little rain falls from May to September and there are no large permanent rivers. The limestone, however, has a high content of absorbed water — hence the wells and windmills, particularly on the upland plains. When we visited Lasithi the sails were being fitted to the mills for the summer, but here and there was an ominous sound: the petrol pump had arrived.

The road from the north enters the plain through a high, narrow pass, flanked with lines of ruined stone windmills that look much more like forts. Among them grew the ubiquitous *Cyclamen creticum,* and we found a few clear pink flowers among the white. The orchids up here were particularly abundant: they included *Ophrys lutea* in its more easterly and less attractive form, *O. l. minor,* the fine Saw-fly Orchid, *Ophrys tenthrednifera,* and another Ophrys, just going over, which was probably *O. fusca omegaifera.* There was a good yellow Orchis, *O. provincialis;* the lovely Mediterranean Butter-fly Orchid, *O. papilionacea;* the rather undistinguished Bug Orchid, *O. coriophora;* and fine clumps of rose-purple *O. quadripunctata. Trifolium uniflorum* grew on these hillsides: this was a plant we had tried in our garden and failed to keep, and truth to tell we had not greatly lamented its passing — a single rather small flower to a head doesn't seem much of a show for a clover. But here we formed a higher opinion of it; the neat foliage formed close mats, literally smothered with purplish-pink or white flowers, the latter rather more attractive. It has, however, a long thick root-stock, and is not easy to move. One other quietly attractive plant of these hills was *Lloydia graeca,* a bulbous plant with thin grass-like leaves and loose sprays of funnel-shaped, creamy-white flowers striped with brown.

We travelled back through Heraklion and away to the west, spending several days at Chania, whence we twice visited the White Mountains. This was the highlight of the holiday, or at any rate of its flower-hunting aspects. A magnificent road climbs for some 30 miles (not as the crow flies, but rather as the snake twists) to reach the Omalos Plain and cross it to a gap in the ridge of the mountains. Here there is a Tourist Pavilion, and the road stops: it is a place with no name that we were able to discover, except that we were at the head of the Xyloskalon, the wooden steps that are the start of the expedition, which we were not able to make, down through the famous Samaria Gorge to the south coast.

Most important for the plant hunter (for whom the gorge has, I believe, little to offer other than *Symphyandra cretica*) is that the Tourist Pavilion is the point from which a path leads up onto the screes and snowfields of the White Mountains. But before sweating up the heights, let us linger a little by the road — indeed we lingered for a couple of hours or more, for this was a most beautiful and absorbing drive. Many of the plants were, of course, those that we had met before. Among the *Cyclamen creticum* were leaves of *C. graecum,* not in flower at this season. In rocky hollows at the lower levels, sometimes drawing attention to itself by its powerful putrid stench, was the statuesque *Dracunculus vulgaris,* two feet or more tall with shiny dissected foliage and its massive flower lurid purple with a shiny almost black spadix. So far as we could make out, it stank only for a short period just as the bloom went over.

Higher up, and wholly beautiful, was the white paeony of Crete, *Paeonia clusii.* It is a dwarf as paeonies go, a rounded plant only a foot or so high, with finely cut foliage and large creamy white cup-shaped single flowers with a tuft of deeper cream stamens and scarlet pistils in the centre. While we were photographing it, a couple of shepherds hauled a kid down with ropes from a precarious rock ledge near by: a rescue operation we presumed, until an expressive throat splitting gesture indicated that the kid was destined for the pot.

We lingered on the Omalos Plain, and searched the grassy strip between the road and a ploughed field, and here we found tulips. They were nearly over, but the few remaining rose-purple petals and the nine-inch stems led us to suppose that they were probably *Tulipa bakeriana,* a Cretan endemic allied to *T. saxatilis* and localized in this area. Here, too, were the leaves of the rather unimposing little *Colchicum pusillum;* and also by the roadside we found beautiful *Arum creticum,* with shining green, yellow-spotted, wavy-edged leaves and waxy cream flowers, each with a prominent yellow spadix.

We saw several yellow Onosmas in Crete, probably variants on a single species, but the one which delighted us most was growing by the head of the wooden steps leading down to the Samaria Gorge: it was *Onosma erectum,* a plant a foot or so high with abundant clear golden yellow flowers, pendent in their spikes over neat narrow silver leaves.

Above the Tourist Pavilion, where one may lunch very comfortably, a clear path winds steeply up into the hills. Here among the rocks, with many of the plants we had already found, were *Daphne oleoides, Prunus prostrata* (whose prostration I have always suspected to be dependent upon pruning by the goats) and the rather attractive little *Corydalis rutifolia* subsp. *uniflora,* whose flowers, few rather than single on a stem, are of good size and colour, and whose leaves are deeply dissected and glaucous: the subspecies is endemic in Crete.

An hour of not very fast walking brought me to the plant I had been particularly seeking — *Anchusa caespitosa,* the true plant, found, I believe, here and nowhere else. It grew in mats, the older plants somewhat heaped up to some six or eight inches in height, and only the young ones showing neat and prostrate habit, which on the show benches receive the approval of the judges; truth to tell the older plants had a good deal of untidy dead wood about them, and from the midst of one such plant were emerged a hearty specimen of another of the Cretan endemics, *Verbascum spinosum.* This plant was not in flower, but the Anchusa was, and very beautifully so, the large brilliant blue flowers stemless on the rosettes of little crinkled hispid leaves. Where I first found *Anchusa caespitosa,* I suppose about 6,000 feet, the sheep and goats were already at work — perhaps this accounted for some of the dead wood.

A little higher was the lowest remaining snow, and breaking through its edge was the beautiful *Crocus sieberi heterochromus,* the true *sieberi* of Gay, according to E. A. Bowles. The petals on their upper faces are clear white, the throat and anthers golden-yellow, and the pistil coral-red; the backs of the outer petals are variously marked with purple, which tends to be in transverse bands rather than the veining or feathering found in other Crocuses. It became more abundant between the snow patches as I climbed to the ridge. 'Climb' is an ill-defined term: there is no clear path in the upper reaches of these mountains, but the going is not particularly difficult, and any reasonably active person can clamber to the ridge. The effort is well rewarded, for here, with no further exertion than it takes to turn around, you may look across chain after chain of fine hills to Chania Bay in the north and down a steep wild scree-filled gully at your feet to the deep wooded valley that hides the Samaria Gorge, and to the southern sea beyond; and perhaps (if you are well endowed with imagination) the Libyan coast. But no imagination is

Campanula tubulosa — a Cretan endemic

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needed to appreciate the Crocuses at your feet, springing not from wet turf, as do the white and purple Crocuses of the Alps, but from all the holes and crevices of acres of broken stone. With the Crocuses are the Chionodoxas; there are supposed to be three species here -— the well-known *Chionodoxa luciliae* and the two endemics, *C. cretica* and *C. nana.* The differences between them are not great, and I can only say that there was a good deal of variation from small to large and from near white to deep blue. Apart from the bulbous plants (which also included a small yellow Gagea) there were a good many hummocky 'spinies' between the rocks. They were not yet in flower, and most of them I could not identify, but one was fairly clearly an *Acantholimon,* most likely *Acantholimon echinus creticum.*

The herds were working their way up towards the ridge, but they still had a thousand feet or so to go. The only fellow mammal I met near the top was a huge and magnificent goat, a superb creature with flowing, wavy, creamy white hair, beautifully marked with brown and black about the head and shoulders, and great double-twisted horns; the 'agrimi', I supposed, the Cretan wild goat, but — alas for my supposition — it was wearing a collar. No doubt its magnificence derived from feeding on *Crocus sieberi* and *Anchusa caespitosa.*

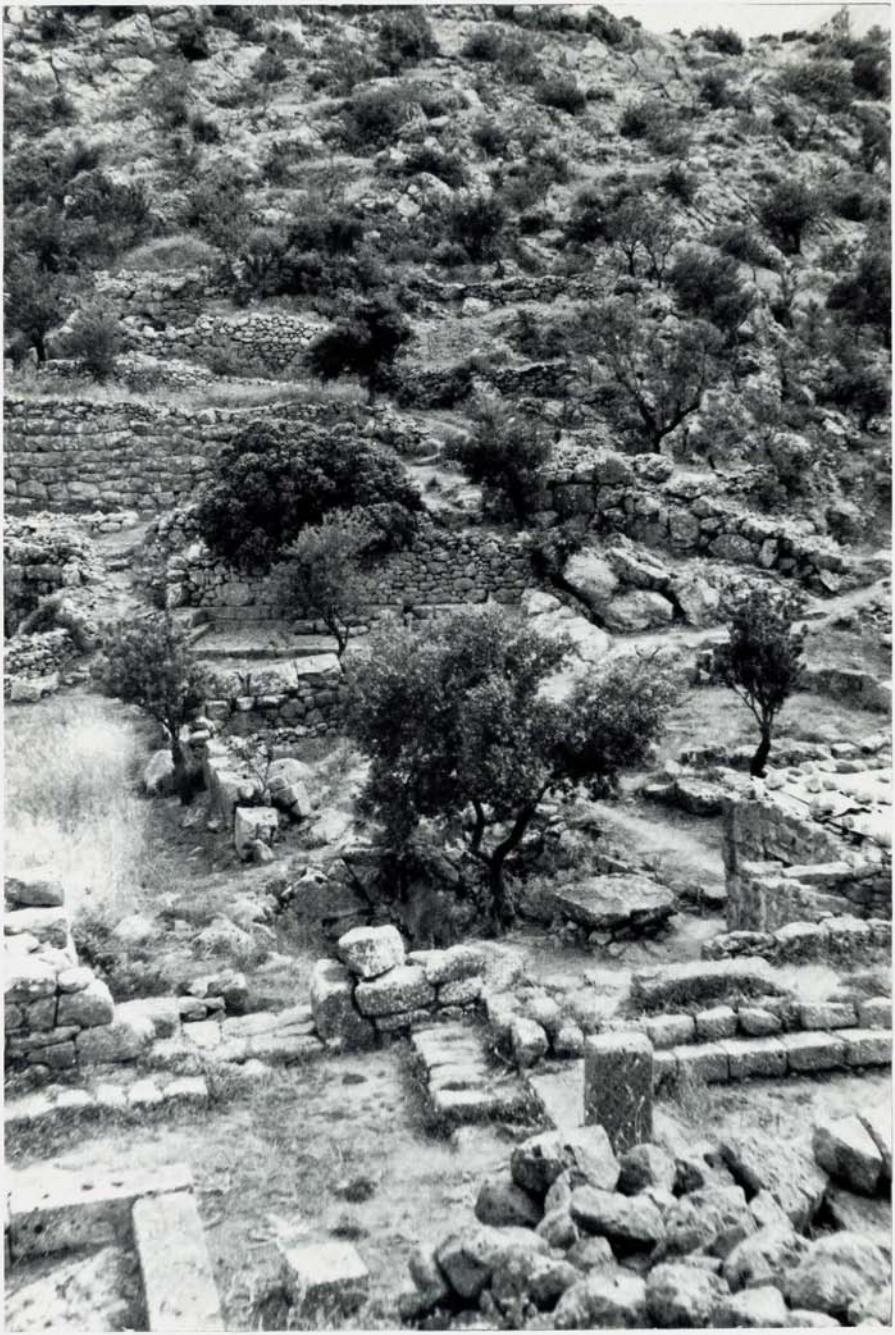
This was the high spot, in every sense of the term, of our plant hunting in Crete: but it is not the full tale, either of our visits or of the plants we found. One of our cherished memories is of our visit to Lato, a Doric town of the seventh century B. C. set among the hills some miles from Agios Nikolaos on the north coast. The setting of these impressive ruins is delightful: they are astride a great saddle, and the man-made structures merge imperceptibly

into the 'wild' rock. It was here that we first met the Dracunculus, which somehow seemed particularly well-placed among the ruins. This, too, was the only place where we found the yellow form of *Ranunculus asiaticus*. There were indeed abundant flowers among the paths and walls. *Orchis pyramidalis* was there in plenty; there were a few plants of *Ruta graveolens*, easier upon the eye than upon the nostrils; the pretty little *Allium subhirsutum* with its delicate white umbels, and the close starry spikes of *Ornithogalum narbonense*. One of the most colourful plants which we saw here and elsewhere was *Ebenus cretica*, like a giant Sainfoin hanging from the rock faces, its pea-flowers in solid rose-pink trusses.

No visitor to the island should fail to cross it by one or another of the fine mountain roads that run from Rethymnon or Heraklion to Phaestos, or across the eastern end of the White Mountains to Chora Sfakion. All these are, for most of their length, at least, well-kept roads running through magnificent scenery, to be taken slowly with an eye for the plants upon the rocks and cliffs. The shortest of these 'crossings', from Vryses to Chora Sfakion, brings you down to the south coast through a fine gorge. Here we found two beautiful Campanulas. One was *Campanula tubulosa*, and the other, a most beautiful plant with flowers rather like those of *Specularia speculum* (which also grew there) lying compactly against the rocks, seemed to be an annual. There was a lovely yellow Linum, in the style of *Linum arboreum* but only 8-10 inches high, which was probably *Linum caespitosum*, and another little yellow flax, an annual, probably *Linum trigynum*. Impressive, at least from a distance, as it hung in a great mauve plume from high up on the cliff face, was the Campanulad *Petromarula pinnata*, rather large for the rock garden and somewhat untidy at close quarters. *Tulipa saxatilis*, another Cretan endemic, we found already in seed among the roadside rocks. Of Muscari there were several: two of them blue (one small and one large); one with brownish fertile flowers, probably *Muscari weissii;* and one a good yellow, probably the endemic *Muscari amoenocomum*.

At lower levels, in stream beds dry on the surface by May, grow the oleander, *Nerium oleander*, delightful with its great rose, salmon-tinged, flowers. At the other end of the size scale, shy in damp ditches, was the tiny, charming, lobelia-like annual *Laurentia tenella*. Another 'ditch plant', but it came up on to the rocks as well, was a good pink Lythrum, probably *Lythrum junceum*, and sharing its position in partial shade was an endemic bellflower, *Campanula pelviformis*, with flowers like Canterbury Bells (the cup sort, not the cup-and-saucer) but in trusses spread flat against the rocks. There were plenty of Sunroses, both pink and white; in places they coloured the hillsides: the white ones were probably *Cistus salvifolius*, and the pink ones probably some of the forms of *C. incanus*. The latter all seemed to be more or less sticky, but we did not satisfy ourselves that we had found subsp. *creticus* from which the shepherds are said to obtain the gum 'ladanum' by combing it out of their goats' beards.

Two plants remain to be mentioned. One of them, *Crepis rubra*, is not indeed a Cretan specialty; it is an annual, but a very beautiful one, with clear rose-pink flowers, and in one place we found a stand of a very lovely white form of it. The other is *Iris cretica* (or *cretensis*), which we found twice, on Mt. Jouktas (where it was past flowering) and near the Dhikti cave, where



The ruins of ancient Lato merge into the 'wild' rock of the hillside. In such sites, where they are more or less protected from the sheep and goats, grow many of the loveliest Cretan flowers.

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the last of the flowers were just fading. Both were very different from the *I. unguicularis* Syn. *stylosa* of our gardens, a plant from Algeria of which *I. cretica* has been regarded as a subspecies: they had very fine grass-like leaves, only 3-4 inches long in the Dhikti plants, and the flowers seemed to have been very small and delicate, rather like those of *I. reticulata.*

There are, I am afraid, far too many question marks against the names of plants we found in Crete: and indeed there are a number of others still unnamed—two Asperulas, for instance, one on the lines of *Asperula cynanchica* and the other more like *A. gussonii;* a white Arabis which, together with a saxifrage of the rotundifolia group, picked up some light from the snow outside and illuminated the walls of the Idha cave; a closely matted, brilliant rose-pink clover; unidentified bulbs which we hope include Sternbergias; the tubers of aroids, which were probably mostly *Biarum tenuifolium,* but may have included the endemic *B. davisii.*

The trouble is that there is not, so far as I know, any flora of Crete in the English language: we learned much from an excellent article by Peter Davis in the *Bulletin* of the Alpine Garden Society (Vol. 5, p. 385), which may perhaps be available to any intending American visitor to Crete through the ARGS. And such a visitor—I do hope there will be some!—should certainly equip himself with *Flowers of the Mediterranean* by Oleg Polunin and Anthony Huxley.

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BRIAN O. MULLIGAN HONORED — Brian O. Mulligan, Director of the Arboretum of the University of Washington, retired June 30, 1972 after devoting over 25 years of dedicated service to the Arboretum, the University and the community. Born in Ireland, he graduated from the Royal Horticultural Society's School of Horticulture, Wisley, England in 1927 and in 1935 was appointed Assistant to the Director of the R. H. S. Gardens. In October, 1946, he came to Seattle as Superintendent of the U. of W. Arboretum and then in the next year as the Director. Since coming to Seattle, Brian and his wife, Margaret, have been members of the American Rock Garden Society where Brian has served for many years as either Director or Vice-president. Both have held office in the Northwestern Chapter of this society.

While Director of the Arboretum, Brian has taken a great interest in all sorts of plants, many of which he felt were worthy of naming and distributing to the gardening public. Included among them are *Magnolia kobus* 'Wada's Memory', *Magnolia salicifolia* 'Else Frye', *Ceanothus* 'Puget Blue', *Acer macrophyllum* 'Seattle Sentinel' and *Rhododendron* 'Seattle Springtime'.

Brian has been active in many related fields. He is Past President of the American Association of Botanical Gardens and Arboreta, Past President of the Western Chapter, International Shade Tree Conference and a member of the Council of the International Dendrology Society. He has had various awards including the Gold Medal of the Massachusetts Horticultural Society for work in Arboretum Development and recently the Veitch Memorial Medal from the Royal Horticultural Society.

BOOK REVIEWS

PLANT JEWELS OF THE HIGH COUNTRY — SEMPERVIVUMS AND SEDUMS by Helen E. Payne, published by Pine Cone Publishers, Medford, Oregon. 145 pages and 111 color plates. $15.00.

Sections of this interesting book deal with the genera *Sempervivum* and *Sedum*. After an introduction, 52 pages are devoted to *Sempervivum*, one to *Orostachys spinosa* and 40 pages to *Sedum*, followed by comments related to their cultivation.

The inconsistency of names of these popular genera in the nursery trade is generally known and justly lamented. The author deserves all credit due for bringing this out in the open with such bold frankness, thus providing an opportunity for a discussion and corrective comments.

The official plurals of these genera are *Semperviva* and *Seda* but the use of the anglicised plurals is welcome and should be encouraged for all Latin words well entrenched in public usage. The genus *Sempervivum* had such a stormy taxonomic past and such widespread synonymy, that the use of a name without that of the author attached is indeterminate. While the author of the book frankly admits that the publication is not to be interpreted in a botanical sense, the "true believers" may appreciate the following brief comments aimed to adjust the situation of the species described and illustrated toward a taxonomic clarification, where it appears necessary.

Hybrids will continue to increase and may become progressively difficult to differentiate as their numbers grow. A tendency is developing to draw some line of demarcation around the "classic" hybrids, with a desire to pin them down with their original names. This effort deserves support.

Names applicable to color plates can easily be mixed up in printing shops or somewhere along the line. On page 20 the color plate of *S. allionii* is that of *S. arenarium*. *S. belladonna* is not recognizable from the illustration so noted; this and *S.* 'Corni di Canso' are the finest cultivars of the *S. tectorum* var. *glaucum* X *alpinum* complex. On page 28, the lower plate is that of some *S. arachnoideum* cross, but not of the species *S. borissovae* Wale. To clarify the descriptions of *S. fauconnetii* and *S. fimbriatum*, the reader is referred to Farrer and Praeger. *S.* 'Grigg's Surprise' is not a *Sempervivum* but *Rosularia persica* according to Prof. Dr. Huber, who, with others, studied the plant intensively before coming to this conclusion. In the opinion of many, this plant represents a transition between the genera *Sempervivum* and *Rosularia*, so that a new name *Sempervivastrum iranense* has been suggested for it. The scope of this review does not permit elaboration on the course of the controversy and its resolving conclusion, including the research on a type of leaf-malformation called "quilling." The excellent color plate on page 43 is of *Jovisbarba hirta* L. var. *neilreichii*, a species. It is true that this plant is offered by more than one nursery under the invalid name of "Histoni."

The upper plate on page 44 is a very nice color shot of *Rosularia pallida (Cotyledon chrysantha)*. *S. kindingeri* does not make a huddled clump, but a sparse mat, and while its separation may be difficult from other yellow flower-

ed, hairy sorts during the rest period, the developing flowering stem is so characteristic that diagnosis is certain while in flower. The petals are ivory-yellow with purplish rose markings at the base. The illustration of *S. morelianum* appears to be that of *S. kosaninii* Praeger. A hybrid of *S. arachnoideum* and *S. calcareum, S. morelianum* is described as having the largest flowers of the red-flowered section, and the clearest color, which is no exaggeration. *S.* "octapodes" is no doubt intended to be *S. octopodes* Turrill, which is so characteristic during the growing season that no confusion with others need occur. The illustration on page 50 to which this name is applied is that of a young rosette of *S. grandiflorum* Haw. or one of its hybrids. The excellent plate of *S. pilosella* is in closer resemblance to its sister hybrid *S. thompsonii* of the same parentage.

The name "reginae amaliae" appealed to many authors and was used in repetition for different species. Baker applied it to a form of *S. heuffelii* in 1878 and the plate on page 54 is apparently this plant. But time marches on, and Praeger reapplied it to a form of *S. schlehanii* (now *S. marmoreum* Gries.) in 1932, and when it finally became a species in its own right, the rules of priority confirmed the name of the plant as described in the Greek Flora of Halacsy, *S. reginae amaliae* Held. & Guic. (not that of Held. & Sart. ex Boissier). The plate on page 60 noted *S. simonkaianum,* may pass as that of *S. morelianum.* Dr. Degen described *S. simonkaianum* in 1902 as a new species; Praeger and others have studied it for many years but could not separate it from *S. hirtum;* it ranks now as a form of this, growing at lower elevations.

Weird names can arise from the re-writing of partly defaced labels such as "Dezermit" which once was "de Zermatt," not a botanical name, but noted in early French horticultural journals. The name commemorates the mountain and district where this natural hybrid was found. Yellow flowered and pubescent, it is suspected to be a cross of *S. montanum* and *S. wulfenii,* but others are often offered under another corrupted name — "Dezermeti."

Descriptions can fly off the handle here and there. *S. doellianum* is a synonym of *S. arachnoideum* var. *glabrescens* with rosettes reaching ½ inch, but not 3 to 4 inches.

The *Sedum* section is very interesting, particularly the elaboration on the variations of *S. laxum.*

After the appearance of Dr. Praeger's monographs on the genera *Sempervivum* and *Sedum* in 1932 and 1921 respectively, a great deal of additional taxonomic work was accomplished. The introduction and bibliography of this book seems to miss such references. Mention of the 600-page *Sedum* monograph by Dr. Froederstroem may not be missed too much; it is so abstractly technical that it is of little help for identification.

As a conclusion, and after all that had to be said, the book provides interesting reading. It is permeated throughout with so much love and devotion to the subject that it is worthwhile to acquire it as a stimulant to grow these interesting plants. Nature will likely run its course, once a collection is acquired and cared for; the growing importance of taxonomy will make itself felt in due course, and then all shall be well.

Albert de Mezey, *Victoria, B. C.*

HARDY PLANT FINDER — 1972, published by HHH Horticultural, Hightstown, N. J. (see ad). $2.00.

A "mighty" little book! Nothing in it but *information* – where to send for plants and gardening supplies. Nearly 300 nurseries and 100 suppliers, in alphabetical order, with addresses. Also lists of plants by categories and where to get them. Lists of plant societies, too, including, of course, The American Rock Garden Society. The nurseries listed are those from 37 states and 6 foreign countries, so the choice is wide.

This booklet is well and attractively printed. If you wonder where to get whatever you want in the gardening line, this is the book for you. The research necessary for its preparation is fantastic. It has already been done for you. Just reading the List of Contents is enough to cause that $2.00 to jump right out of your pocket!

TULIPA TARDA AND *T. DASYSTEMON*

VACLAV PLESTIL, *Turnov, Czechoslovakia*

(Editor's Note)—Mr. Plestil takes exception to some of the suggested nomenclatural changes as listed on pages 32 and 33 of the 1972 Seed List of the ARGS. In the following article he gives his reasons for his disquietitude in the case of the suggested change of *Tulipa tarda* to *T. dasystemon.* The editor calls attention to the comment of Anna N. Griffith in her *Collins Guide to Alpines.* Of *Tulipa dasystemon* she writes, *"Tulipa dasystemon* of gardens is *T. tarda"* and for *T. tarda, "T. tarda (dasystemon* of gardens). E. Turkestan." Long ago, the editor *bought* tulip bulbs under the name of *Tulipa dasystemon* and when they flowered on short stems with several blossoms per bulb with their bright, white-topped, yellow faces, he was pleased. Actually they were not *T. dasystemon* Regel, but, undoubtedly. *T. tarda Stapf.* Here the confusion seems to be properly placed in the laps of the tulip growers and suppliers. In the letter accompanying his article, Mr. Plestil defends the genus *Pulsatilla Mill.* as a genus properly separated from the genus *Anemone* L. on the basis of the difference in the seed appendages, those of *Pulsatilla* being elongated and plumose, while those of *Anemone* are short. Such distinction is recognized by Abrams in his *Illustrated Flora of the Pacific States* where he lists but one species of *Pulsatilla,* that being *P. occidentalis,* and several *Anemone.* Czechoslovakia claims quite a few species of *Pulsatilla.* Mr. Plestil's article follows:

I would like to write a few words on these two small *Tulipa* species, which, though well known, still are often wrongly used, especially the second one. Too often is the true *T. tarda* labeled as *T. dasystemon;* so often are these two names used as synonyms for one plant. In the last few years it is perhaps true that this mistaken naming comes less frequently and we find *T. tarda* in seed lists and in catalogues under the right name. So, I was surprised when at the end of the current seed list of our society, the ARGS, a list of recommended changes in plant names, even to the changing of *T.*

tarda to *T. dasystemon.* Seeing this, I had an immediate impulse to write this short article.

The epithets 'tarda' and 'dasystemon' are not synonymous; and if the well-known small tulip, frequently grown in alpine gardens, with several flowers from one bulb is truly *T. tarda* Saphf, it does not mark as invalid the name *T. dasystemon,* a name walking through literature for the last 90 years like a phantom, for it is the correct name of another plant. Perhaps it will be best here to give a short description of both plants and tell of the characteristics of each.

Tulipa dasystemon Regel was described in 1880 by its author from plants collected in the environment of Alma Ata. It is a small tulip with an ovate bulb up to 10 to 15 mm in diameter, with dark brown (in the wild often blackish) and thin, paper-like coat with sparse adpressed hairs at the tip. Leaves in this species are everywhere only two, brought together at the base and in the time of flowering these leaf bases are underground. They are up to 10 cm tall (the upper one is some smaller) and from 5 to 15 mm wide, glaucous with very narrow reddish margins. In the time of flowering, the stems are shorter, up to 5 cm high; later they become longer, up to 10 to 20 cm. These stems are single and there is only one yellow flower. The outer perianth segments have an outside brownish-violet shade on the mid-stripe, up to 20 mm long. A. T. Vvedenskij, in *Flora SSSR IV,* says the measurements are from 15 to 40 mm long and only 4 mm wide; the inner segments are wider, up to 7 mm and up to 17 mm long, acutely tipped. There are a few tiny hairs at the base.

Tulipa dasystemon grows on gravelly slopes exposed to the northeast in subalpine and alpine zones in Kashgaria, in Dashungarian Alatau and in Transsilian Alatau (Z. P. Botschanceva); and it is very rare in culture. There occur several very near species, but all easily distinguished from *T. tarda.* These are *T. dasystemonoides* Vved., *T. orithyoides* Vved., *T. callieri* Halacsy et Lev., *T. biflora* Pall., and *T. bifloriformis* Vved., and perhaps even *T. polyshroma* Stapf.

Tulipa tarda Stapf, on the other hand, described properly without the location given, in 1933, (in *Flora SSSR IV* is cited in West Tian Schian, "certainly Turkestan"). Later it was collected in several other localities not too far from each other, always in the zone of shrubby formations—in Kirgiz part of West Tian Schian.

It is a small plant with a somewhat larger bulb than *T. dasystemon,* up to 30 mm in diameter, with a leathery coat; in culture usually reddish brown. Leaves are in number 3 to 7, outstanding, vivid and glossy green, slightly grooveshaped, with tiny red margins, up to 12 cm long. Flowering stems are branched, some plants having up to 15 flowers from one bulb in gardens; stems and pedicels short but lengthening at seed-ripening time. However, there is not so marked a difference as in *T. dasystemon.* Flowers are yellow, usually with a white margin on each perianth segment. Outer perianth segments have outside greenish brown-shaded stripe up to 35 or 40 mm long and to 13 mm wide, broadly lanceolate.

From these short descriptions we see that these two species, *T. dasystemon* and *T. tarda* are not so similar as to be mistaken each for the other. There should not be such mistakes in the literature of alpine gardening!

For the proper study of tulips I'd like to recommend the very precise monographic work on tulips inhabiting the territory of URSS of Z. P. Botschanceva *Tulips of USSR,* Tashkent 1962. There is very valuable data on culture of the plants described and there are very precise cytological studies of many species. There are so described 18 species not included in *Flora SSSR,* vol. IV in 1935.

Looking down on the Columbia River from the hills east of Goldendale, Washington on a cloudy, windy day. Across the river is a bit of Oregon. The foreground is the rocky habitat of many semi-desert plants including an occasional *Lewisia rediviva.* ARGS field trip to the Satus Pass area in Klickitat County April 8 and 9, 1972.

Gus N. Arneson

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GARDENS AND MOUNTAINS OF CENTRAL EUROPE — As this is being written (July 19) the ARGS sponsored European tour, organized by Flora and Travel, Ltd. (which to ARGS members means organized and escorted by Harold and Esta Epstein) will have come to an end and the tour personnel will have disbanded. No reports have yet reached the editor, but he has in his mind followed the progress of these fortunate people. In spirit he has been with them, especially as they visited the gardens of our ARGS members. What rare good fortune to have been able to attend a meeting of the Rock Garden Club of Czechoslovakia — to have visited the gardens of such people as Mrs. Olga Duchacova, Mr. B. Janouch, Dr. R. Horny, Mrs. Vera Stepankova, Mr. Vaclav Plestil and Mr. Jaromir Grulich — all ARGS members. And in Austria, two other ARGS members, Dr. Franz Kiesenhofer and Ing. Hubert Martin, led visits to public gardens and Mr. Fritz Kummert showed his own private garden. Both Dr. Kiesenhofer and Fritz Kummert attended the Harrogate Conference last year. The editor can console himself for missing the Dolomite part of the tour by reading what those two fine Italian authors have written about these fantastic mountains in an article appearing in the July issue of the ARGS *Bulletin.*

Ionopsidium acaule

Roger and Joy Spurr

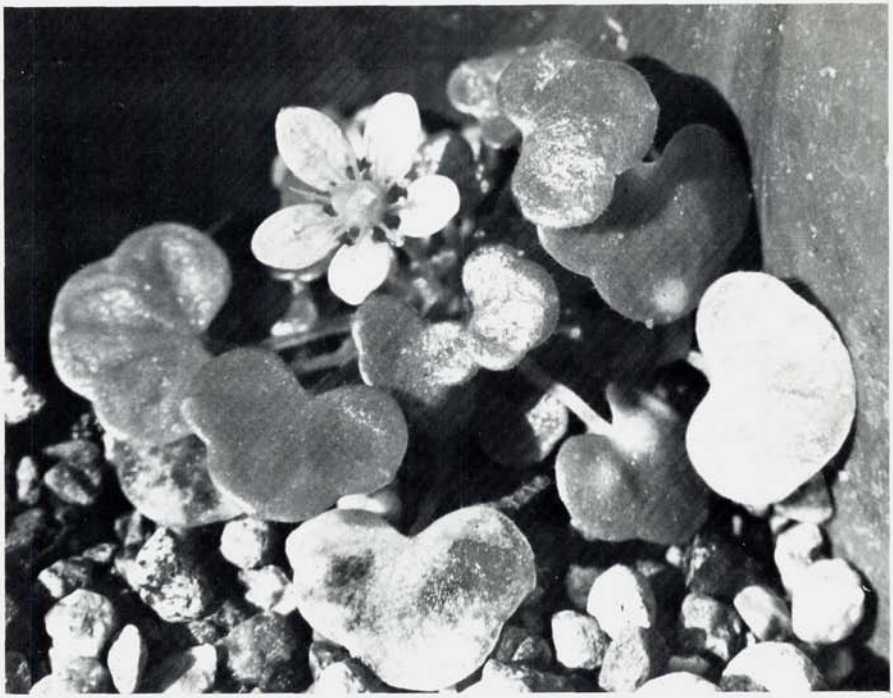
FIVE ROCK GARDEN ANNUALS

LAURA JEZIK, *Seattle, Wash.*

Those of us who have read all the right books (and all the wrong books — if there are any) know that annuals are *verbotten* or anathema in the rock garden among alpine purists. Having bowed to the experts and acknowledged the rules, I shall now proceed to describe five plants which are either outright annuals or monocarps or short-lived perennials, but which are delightfully right for the rock garden, or more especially for container gardens or troughs. Their rightness is in their perfection of scale and in their willingness to take care of themselves . . .

The first two annuals I shall discuss are very similar in size and scale and blend together interestingly. *Ionopsidium acaule,* from Portugal, has a basal tuffet of shiny kidney-shaped leaves, from which rise one-inch stems of bluish crucifer flowers at welcome times throughout the season. It is hardy through mild winters and continues blooming as it wills, and then, one day, it decides it has lived out its allotted span of time and it packs its bag and is gone. Its seed germinates at nearly any time of the year, and it blooms when it knows it is old enough and wise enough to do so. As a self-perpetuating weed in a container it is unsurpassable and so is the following plant:

Saxifraga huetiana, from Asia Minor, may live over for more than one



Saxifrage huetiana

Roger and Joy Spurr

year and is not a monocarp. Perhaps it might be thought of as a very short-lived perennial. For nearly the entire growing season the one and one-quarter inch forked stems support little golden sax. stars over tiny, shiny, basal leaf tuffets, and it is a prodigious seeder, with babies coming up in odd corners throughout the season. This free seeding might frighten gardeners, but we must remember this tiny plant dies out under larger plants and only stays established where it has little competition. I find it perfect for containers of the tiniest plants, giving summer flowers when the perennials have gone past bloom.

Sedum caeruleum is truly annual. Its seed germinates as late as mid-summer with me, but the seedling quickly grows into a mound which will fill a 4″ cube. There is no basal growth, the stem arises, branches, blooms with the lightest of caerulean medium blues, branches and blooms again, and so on until one day, late in the fall, it quits and is gone, having left seed for the following year. I like it in containers, where it doesn't grow over 2″ tall, but it is pleasant in crazy paving and in screes. This Mediterranean plant has typical fat sedum leaves, linear, blunt-tipped, and light green. Its greatest value is in providing that lovely light clear blue in the height of summer, when rock gardens have to depend for blue upon the green blues of gentian and Lithospermum.

Saxifraga strigosa is a Himalayan annual of the Boraphylla section, with hairy-leaved basal rosettes and 2″ stems of golden, full-petaled flowers. It is less inclined to maintain itself, and seed should be saved each year. It likes a bit more damp than the other plants I have mentioned, but adapts rather nicely to less than ideal conditions. It is in bloom from mid-summer on, and associates delightfully with *Viola hederacea* and tiny shade-loving plants.

Sedum sempervivoides is sometimes an Umbilicus and sometimes a Cotyledon, so it belongs in that no man's land with Orostachys and other imponderables. The plant, however, is very like Sempervivum, somewhat hairy in rosette, and when the mood is upon it, it sends up its 4" stalk of red flowers, sets its seed, and is gone. It is always worthwhile to save its seed to have it always with you.

This list doesn't exhaust the possibilities of annuals for the rock garden. I have tended to concentrate on especially tiny plants and have probably overlooked some fine things which sound too tall to try, and I should be delighted to hear about annuals other collectors have enjoyed.

Editor's Note — This article first appeared in the January, 1971 issue of the *Bulletin* of the Alpine Garden Club of British Columbia and is used with permission.

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TWO HONORS FOR DR. WILLIAM C. STEERE, PRESIDENT OF THE NEW YORK BOTANICAL GARDEN — The last honor, to date, given this long time member of the ARGS is the highest award of the NYBG, the Distinguished Service Award which was given to Dr. Steere on May 4, 1972. Prior to that, on March 30, 1972 the Emperor of Japan, upon the recommendation of the Government, at a special ceremony in Tokyo, honored Dr. Steere by conferring on him the Second Class of the Order of the Sacred Treasure. The First Class of the Order is reserved solely for heads of state. Dr. Steere was thus signally honored in recognition of his work in promoting good international relations in the field of science by arranging for student exchange between the two countries.

* * * * *

A FEW STATISTICS – In the 1971-72 Seed Exchange there were 874 requests for seed, 656 from home members and 218 from overseas. The highest total received in one day was 96. Several volunteers filled orders in the evening, arriving 'on duty' about 6:30 p.m. and working until 11 p.m. two or three nights a week. During the two 'peak weeks' of requests, we worked from 9 a.m. until 11 p.m. at least five days a week and from 9 a.m. to 6 p.m. the remaining two days. Our workshop is referred to as the 'MOLE HOLE' because it is down in the basement. During these two weeks most orders were mailed out within 24 hours. The 'Seedy Committee' was very proud of this accomplishment inasmuch as an order can take 15 minutes to half an hour to fill. If complications set in, the time can be even longer.

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A SALUTE TO THE CZECHOSLOVAKIAN ROCK GARDEN SOCIETY —This society is three years old and boasts a membership of 600! On June 27, 1972 some 300 of them attended a special meeting to welcome forty Americans, mostly ARGS members. The evening was characterized by the warmth, sincerity and enthusiasm of people with a common interest. It was indeed a distinct privilege to meet so many rock garden enthusiasts in Czechoslovakia, who until that memorable evening had been just names, and to see so many fellow rock gardeners who had come great distances to greet visitors from America. Truly, they have lavished us with fond and unforgettable memories.

R. Gevjan.

OMNIUM-GATHERUM

The Annual Meeting of the ARGS for 1972, held at Canandaigua, N. Y. in mid-May, was not reported to the editor in time to be commented on in the July *Bulletin*. However, a report received later from our new secretary, Milton S. Mulloy, contained the following comments which cannot and should not be overlooked. He wrote:

"There were lots of lovelies in the Show and too little space for too many people, all trying to see everything all at once. I would have welcomed the whole weekend studying those plants at leisure, minus the population *implosion* that blew everyone into the bargain basement scene — well, not quite that bad, but nearly!

"On Sunday, five Ithaca gardens were visited in the rain — all lovely, all different, and all graced with warm hospitality at every turn.

"And last, but not least, because personally it was a part of the larger experience and scene, the trip to and from Bernard's beautifully sited home Saturday noon — lunch and plant sale — good in themselves and evidencing much forethought, were apposite parts of a whole. This, as it happened, was my first trip to, from, and through some of the Finger Lakes country and the excursion to Geneva and Bernard's became thus a part of the total picture — a beautiful rolling land burgeoning with the new growth of spring; a spring-wet land awaiting drying sun and gentle airs, then the plow. Here the mouse-ear young oak leaves gave us from farther east a small second spring.

"But what became the lasting highlights of the whole trip was a two-fold endless feast—mile after mile of *Trillium grandiflorum* and in wetter, lower woods, the same sweeping abundance of marsh marigold, *Caltha palustris*. Each of these, coming and going, with their wonted woodlands interspersed with farms and farming towns. In that setting, through those farmlands so full of the spring promise of coming abundance, with the Harkness home as a warm and hospitable magnet, one sensed a long-settled land, a gentle land, a civilized land where man had early learned somewhat, and somehow, to live with nature; one caught a largeness of view — not just scenically, but intellectually and spiritually also; one became aware that in and around Geneva, much of horticultural and agricultural importance had transpired, and while one longed in consequence to linger and explore, one was thankful for even fragmentary glimpses of gracious people, clearly at terms with themselves and with their land."

LOOK FORWARD TO THE YEAR 1976 — The reality of an Interim International Rock Garden Plant Conference in 1976 is a step nearer. At the Annual Meeting of the American Rock Garden Society in May, this year, such a conference was authorized. It is to be held in July in Seattle and vicinity under the joint sponsorship of the ARGS and the Alpine Garden Club of British Columbia. No definite plans have yet been formulated, however, it is now contemplated that there will be no competitive show, such as was held at Harrogate in 1971. There are several reasons for this, namely the mid-summer date, the difficulty of transporting plants from the homes of many expected delegates — from England, Scotland, Continental Europe, Japan, New Zealand and eastern United States and the restrictions on bringing plants across borders.

As a substitute for a show it is thought to let Nature provide the showing of alpines. The Pacific Northwest is bountifully supplied with beautiful and easily accessible mountains where alpines are to be seen and studied in their native homes nestled among the rocks and in natural relationship with each other in meadow, scree and cliff. Nature has no set rules for such exhibits — no plants in pots or pans — no prescribed arrangement by family, genus or species — no man-inspired cultivars — no one pan of this or three pans of that, and no prizes. Nature cherishes each one of her flower children in her vast rock gardens in the mountains and cares not a whit about blue ribbons, best of show, etc. To Nature all plants are equal; each a beloved entity and all displayed under the sky for all mankind to seek out and admire.

Delegates will be accorded ample opportunity to visit in comfort the Olympic flower fields, the Cascade Range, both in British Columbia and in Washington, the local mountains about Vancouver in Canada and, of course, magnificent Mt. Rainier, over 14,000 feet. Over fine highways they will roll to above the 6,000 foot level which is within a thousand feet of the average limit of trees on this mountain. There are fine and unusual and numerous gardens, too, mostly in the vicinity of Seattle, of Vancouver and of Victoria. It is too soon to be thinking of transportation problems from far places and their solutions but it is now the time to start planning and saving for this 1976 extravaganza.

Look forward to being greeted in the Olympics by such delightful mountain dwellers as *Campanula piperi, Viola flettii, Petrophytum hendersonii, Douglasia laevigata, Phacelia sericea, Potentilla villosa,* perhaps *Synthyris lanuginosa.* Remember, your mountain trips from Seattle and Vancouver will not be confined to the Olympics and their particular plants. There will be other mountains and other plants. So LOOK FORWARD!

SEEDS, SEEDS AND MORE SEEDS ! ! ! —Many members have been and are now busy gathering and processing these wonderful bits of latent life (seeds) which hold within themselves so much future enjoyment for so many ARGS members, and others, as well. To you gatherers it is suggested that you reread Roxie Gevjan's article in the July *Bulletin.* Please observe the deadlines and other conditions imposed by this energetic and capable Seed Exchange Director, to wit: Nov. 1 for the closing date for seed lists — Dec. 1 for delivery of seeds to the Exchange, provided such seeds have appeared on the lists sent in by Nov. 1.

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